

S/N 10/587,636

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NEWS 4 OCT 07 Multiple databases enhanced for more flexible patent
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NEWS 5 OCT 22 Current-awareness alert (SDI) setup and editing
enhanced
NEWS 6 OCT 22 WPIDS, WPINDEX, and WPIX enhanced with Canadian PCT
Applications
NEWS 7 OCT 24 CHEMLIST enhanced with intermediate list of
pre-registered REACH substances
NEWS 8 NOV 21 CAS patent coverage to include exemplified prophetic
substances identified in English-, French-, German-,
and Japanese-language basic patents from 2004-present
NEWS 9 NOV 26 MARPAT enhanced with FSORT command
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NEWS 12 NOV 26 Two new SET commands increase convenience of STN
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coverage of complete UK patent families
NEWS 15 DEC 17 Fifty-one pharmaceutical ingredients added to PS

NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3,
AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

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* * * * * STN Columbus * * * * *

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S/N 10/587,636

=> set abbr on perm
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=> set plurals on perm
SET COMMAND COMPLETED

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=> s jp 60-127303/pn
L1 2 JP 60-127303/PN

=> d l1 1-2 all

L1 ANSWER 1 OF 2 INPADOCDB COPYRIGHT 2008 EPO/FIZ KA on STN

AN 37851893 INPADOCDB
FN 26287510
IN TODA TAKASHI; YAMAMOTO FUMITADA; KAWAMOTO YOSHINORI
PA IDEMITSU PETROCHEMICAL CO
DT Patent
PI JP 63038041B B 19880728
PIT JPB PUBLD. EXAMINED PATENT APPLICATION [PUBLISHED FROM 1971 ONWARDS]
DAV 19880728 examined-printed-without-grant
STA PRE-GRANT PUBLICATION
AI JP 1983-234349 A 19831214
AIT JPA Patent application
PRAI JP 1983-234349 A 19831214 (JPA)
PRAIT JPA Patent application
REC 3. THERE ARE 3 CITED REFERENCES (3 PATENT, 0 NON PATENT) AVAILABLE FOR
THIS RECORD. ALL CITATIONS ARE AVAILABLE IN THE RE FORMAT.
IPCR C08F0006-00 [I,A]
C08F0006-00 [I,C*]
FA AI; AN; DAV; DT; IN; IPC; IPCR; PA; PI; PIT; PRAI; REP

L1 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2008 ACS on STN
AN 1985:579471 CAPLUS
DN 103:179471
OREF 103:28895a,28898a
ED Entered STN: 30 Nov 1985

TI Removal of volatile components from liquid polymers
 PA Idemitsu Petrochemical Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 3 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C08F006-00
 CC 39-4 (Synthetic Elastomers and Natural Rubber)
 Section cross-reference(s): 35, 37

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|--------------|
| PI | JP 60127303 | A | 19850708 | JP 1983-234349 | 19831214 <-- |
| | JP 63038041 | B | 19880728 | | |
| PRAI | JP 1983-234349 | | 19831214 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|------------|-------|------------------------------------|
|------------|-------|------------------------------------|

| | | |
|-------------|------|---------------------------------------|
| JP 60127303 | ICM | C08F006-00 |
| | IPCI | C08F0006-00 [ICM,4] |
| | IPCR | C08F0006-00 [I,C*]; C08F0006-00 [I,A] |

AB Removal is accomplished efficiently without affecting the polymers by adding 5-40% water or steam to 95-60% liquid polymer, then stripping at 100-130°/≤50 mm. Thus, 80 parts mixture of 96.5% liquid diene rubber R 45HT and 3.5% vinylcyclohexene (I) [25168-07-4] was mixed with 20 parts water and fed at 19.8 kg/h to a thin-film evaporator operating at 119°/10 mm with residence time 1.8 min to obtain 16.0 kg/h product containing <10 ppm I and 103 ppm H₂O, vs. 427 and 51 ppm, resp., without the added water.

ST volatile compd removal liq polymer; water addn liq polymer stripping; steam addn liq polymer stripping; vacuum stripping liq polymer water; diene rubber liq vacuum stripping; vinylcyclohexene removal liq butadiene rubber

IT Steam
 (addition of, to liquid polymers, for faster removal of volatile components by vacuum stripping)

IT Polymers, uses and miscellaneous

RL: USES (Uses)

(liquid, removal of volatile compds. from, by addition of water and vacuum stripping)

IT Volatile substances

(removal of, from liquid polymers, by addition of water and vacuum stripping)

IT Rubber, butadiene, preparation

RL: PREP (Preparation)

(hydroxy-terminated, manufacture of liquid, removal of volatile compds. in,

by

addition of water and vacuum stripping)

IT Evaporation

(vacuum, of volatile components from liquid polymers, acceleration of, by addition of water)

IT 7732-18-5, uses and miscellaneous

RL: USES (Uses)

(addition of, to liquid polymers, for faster removal of volatile components by vacuum stripping)

IT 25168-07-4

RL: REM (Removal or disposal); PROC (Process)

(removal of, from liquid butadiene rubber, by addition of water and vacuum stripping)

IT 9003-17-2P

S/N 10/587,636

RL: PREP (Preparation)
(rubber, butadiene; manufacture of liquid, removal of volatile compds. in,
by addition of water and vacuum stripping)

=> s jp 8-301929/pn
L2 2 JP 8-301929/PN

=> d 12 1-2 all

L2 ANSWER 1 OF 2 INPADOCDB COPYRIGHT 2008 EPO/FIZ KA on STN

AN 30983459 INPADOCDB
FN 10918145
DT Patent
PI JP 3310536B B2 20020805
PIT JPB2 GRANT. PATENT WITH A [FROM 2500000 ONWARDS, FROM 1996]
DAV 20020805 printed-with-grant
STA GRANTED
AI JP 1996-75235 A 19960305
AIT JPA Patent application
PRAI JP 1996-75235 A 19960305 (JPA)
JP 1995-72414 A 19950306 (JPA)
PRAIT JPA Patent application
IC.V 7
ICM C08F008-04
ICS C08F297-04; C08J009-28
IPCR C08J0009-28 [I,A]; C08F0008-04 [I,A]; C08F0297-04 [I,A]
C08J0009-00 [I,C*]; C08F0008-00 [I,C*]; C08F0297-00 [I,C*]
FA AI; AN; DAV; DT; ICM; ICS; IPC; IPCR; PI; PIT; PRAI

L2 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2008 ACS on STN

AN 1996:635151 CAPLUS
DN 125:250153
OREF 125:46741a,46744a
ED Entered STN: 28 Oct 1996
TI Microporous crumbs of hydrogenated block copolymers and process for
producing the same
IN Kusano, Manabu; Ishii, Masao; Sukenobe, Nobuo
PA Kuraray Co., Ltd., Japan
SO Eur. Pat. Appl., 12 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM C08F008-04
ICS C08F297-04
CC 39-4 (Synthetic Elastomers and Natural Rubber)
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|-------------------------------|------|----------|-----------------|--------------|
| PI | EP 731111 | A2 | 19960911 | EP 1996-103480 | 19960306 |
| | EP 731111 | A3 | 19961106 | | |
| | EP 731111 | B1 | 19990602 | | |
| | R: CH, DE, FR, GB, IT, LI, NL | | | | |
| | CA 2171045 | A1 | 19960907 | CA 1996-2171045 | 19960305 |
| | CA 2171045 | C | 20020813 | | |
| | JP 08301929 | A | 19961119 | JP 1996-75235 | 19960305 <-- |
| | JP 3310536 | B2 | 20020805 | | |
| | US 5616652 | A | 19970401 | US 1996-611820 | 19960306 |

PRAI JP 1995-72414

A 19950306

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|-------------|--|--|
| EP 731111 | ICM | C08F008-04 |
| | ICS | C08F297-04 |
| | IPCI | C08F0008-04 [ICM,6]; C08F0008-00 [ICM,6,C*]; C08F0297-04 [ICS,6]; C08F0297-00 [ICS,6,C*]; |
| | IPCR | C08F0008-00 [I,C*]; C08F0008-04 [I,A]; C08F0297-00 [I,C*]; C08F0297-04 [I,A] |
| CA 2171045 | ECLA | C08F008/04+297/00; C08F297/04N |
| | IPCI | C08F0297-00 [ICS,6] |
| | IPCR | C08F0008-00 [I,C*]; C08F0008-04 [I,A]; C08F0297-00 [I,C*]; C08F0297-04 [I,A] |
| JP 08301929 | IPCI | C08F0008-04 [ICM,6]; C08F0008-00 [ICM,6,C*]; C08F0297-04 [ICS,6]; C08F0297-00 [ICS,6,C*]; C08J0009-28 [ICS,6]; C08J0009-00 [ICS,6,C*]; |
| | IPCR | C08J0009-00 [I,C*]; C08J0009-28 [I,A]; C08F0008-00 [I,C*]; C08F0008-04 [I,A]; C08F0297-00 [I,C*]; C08F0297-04 [I,A] |
| US 5616652 | IPCI | C08F0006-10 [ICM,6]; C08F0006-12 [ICS,6]; C08F0006-00 [ICS,6,C*] |
| | IPCR | C08F0008-00 [I,C*]; C08F0008-04 [I,A]; C08F0297-00 [I,C*]; C08F0297-04 [I,A] |
| | NCL | 525/315.000; 525/316.000 |
| | ECLA | C08F008/04+297/00; C08F297/04N |
| AB | The title crumbs are produced by the process comprising feeding a solution of a hydrogenated block copolymer (e.g., styrene-isoprene-styrene or styrene-isoprene block copolymer) in a hydrocarbon solvent (e.g., cyclohexane) at a 5-60% solids concentration into hot water at the solution temperature | |
| | 40-150° to conduct steam stripping at a temperature higher than the b.p. of the hydrocarbon solvent or higher than the azeotropic point of the hydrocarbon solvent and water when they form an azeotropic mixture and lower than 150°C, wherein the hydrogenated block copolymer is obtained by hydrogenating ≥50% of unsatd. bonds derived from conjugated diene of a block copolymer having ≥1 polymer block consisting essentially of a vinyl aromatic compound and ≥1 polymer block consisting essentially of a conjugated diene in which the weight ratio between the vinyl aromatic compound and the conjugated diene is from 5/95 to 95/5, a bulk d. of the crumbs is ≥0.18 g/cm ³ , a total volume of micropores of the crumbs is ≥0.4 cm ³ /g and a ratio of the sum of the volume of micropores having a pore diameter 0.14-3.9 μm based on the total volume of the micropores of the crumbs is ≥8%. The microporous crumbs can absorb a softening agent, a plasticizer and the like uniformly and rapidly, have excellent handling property and provide molding compds. free of non-melted matters. | |
| ST | styrene isoprene block rubber hydrogenated crumb | |
| IT | Rubber, synthetic | |
| | RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation) (isoprene-styrene, hydrogenated; microporous crumbs of hydrogenated block copolymers and process for producing the same) | |
| IT | 25038-32-8P, Isoprene-styrene copolymer | |
| | RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation) (microporous crumbs of hydrogenated block copolymers and process for producing the same) | |

=> s jp 1-182308/pn

L3 2 JP 1-182308/PN

=> d 13 1-2 all

L3 ANSWER 1 OF 2 INPADOCDB COPYRIGHT 2008 EPO/FIZ KA on STN

AN 3452395 INPADOCDB
 FN 3416065
 DT Patent
 PI JP 1779654 C 19930813
 PIT JPC GRANTED PATENT [FROM 1000000 ONWARDS]
 DAV 19930813 printed-with-grant
 STA GRANTED
 AI JP 1988-4812 A 19880114
 AIT JPA Patent application
 PRAI JP 1988-4812 A 19880114 (JPA)
 PRAIT JPA Patent application
 IPCR C08F0006-10 [I,A]; C08C0019-00 [I,A]; C08F0006-00 [I,A];
 C08F0006-06 [I,A]; C08F0008-00 [I,A]; C08F0212-00 [I,A];
 C08F0212-06 [I,A]; C08F0236-04 [I,A]; C08F0236-10 [I,A];
 C08F0297-04 [I,A]
 C08C0019-00 [I,C*]; C08F0006-00 [I,C*]; C08F0008-00 [I,C*];
 C08F0212-00 [I,C*]; C08F0236-00 [I,C*]; C08F0297-00 [I,C*]
 FA AI; AN; DAV; DT; IPC; IPCR; PI; PIT; PRAI

L3 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2008 ACS on STN

AN 1989:575327 CAPLUS
 DN 111:175327
 OREF 111:29215a,29218a
 ED Entered STN: 10 Nov 1989
 TI Recovery of diene block copolymers by steam stripping of polymerization solvents
 IN Shiraki, Toshinori; Hoshi, Susumu
 PA Asahi Chemical Industry Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 13 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C08F212-06
 ICS C08F006-10; C08F236-04
 CC 37-1 (Plastics Manufacture and Processing)
 Section cross-reference(s): 39
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--------------|------|----------|-----------------|--------------|
| PI | JP 01182308 | A | 19890720 | JP 1988-4812 | 19880114 <-- |
| | JP 04065082 | B | 19921019 | | |
| PRAI | JP 1988-4812 | | 19880114 | | |

CLASS

| PATENT NO. | CLASS | PATENT FAMILY CLASSIFICATION CODES |
|-------------|-------|---|
| JP 01182308 | ICM | C08F212-06 |
| | ICS | C08F006-10; C08F236-04 |
| | IPCI | C08F0212-06 [ICM,4]; C08F0212-00 [ICM,4,C*]; C08F0006-10 [ICS,4]; C08F0006-00 [ICS,4,C*]; C08F0236-04 [ICS,4]; C08F0236-00 [ICS,4,C*] |

AB A method for recovering block copolymers of dienes and aromatic vinyl monomers from the polymerization mixts. using organic Li initiator comprises addition of ≥ 1 equiv (per equiv Li) active H-containing reaction terminating agents, addition of CO₂, addition of a stabilizer, and steam stripping the solvents. Thus, butadiene-styrene triblock copolymer (I) was prepared in

cyclohexane using BuLi initiator. After polymerization, adding water, adding

CO2 to pH 6.2, adding 0.5 part (per part I) octadecyl 3-(3,5-tert-butyl-4-hydroxyphenyl)propionate and 0.5 part tris(2,4-di-tert-butylphenyl) phosphite and crumb-forming agents, and steam stripping the solvent gave polymer crumbs containing 45% water. Pellets from this polymer after dewatering had good transparency and colorability.

ST polymn solvent steam stripping; butadiene styrene block copolymer; SBR rubber recovery steam stripping

IT Transparent materials
(diene copolymers, recovery of, from solution polymerization mixts.)

IT Discoloration prevention
(of transparent diene block copolymers during steam stripping, by pretreatment with carbon dioxide)

IT Water-resistant materials
(transparent diene block copolymers, recovery of, from solution polymerization mixts.)

IT Rubber, butadiene-styrene, preparation
RL: PREP (Preparation)
(block, recovery of, from solution polymerization, by steam stripping of solvents)

IT Rubber, butadiene-styrene, preparation
RL: PREP (Preparation)
(block, triblock, recovery of, from solution polymerization, by steam stripping of solvents)

IT Rubber, butadiene-styrene, compounds
RL: PREP (Preparation)
(hydrogenated, block, triblock, recovery of, from solution polymerization, by steam stripping of solvents)

IT Rubber, synthetic
RL: PREP (Preparation)
(isoprene-styrene, block, triblock, recovery of, from solution polymerization, by steam stripping of solvents)

IT Distillation
(steam, recovery by, of diene block copolymers after solution polymerization)

IT 124-38-9, Carbon dioxide, uses and miscellaneous
RL: USES (Uses)
(in steam stripping of polymerization solvents from diene block copolymers)

IT 106107-54-4P
RL: PREP (Preparation)
(rubber, block, triblock, recovery of, from solution polymerization, by steam stripping of solvents)

IT 106107-54-4P 694491-73-1P
RL: PREP (Preparation)
(rubber, block, triblock, recovery of, from solution polymerization, by steam stripping of solvents)

IT 106107-54-4P
RL: PREP (Preparation)
(rubber, hydrogenated, block, triblock, recovery of, from solution polymerization, by steam stripping of solvents)

IT 106107-54-4P, Butadiene-styrene block copolymer 694491-73-1P
RL: PREP (Preparation)
(triblock, recovery of, by steam stripping of solvents)

S/N 10/587,636

IT 105729-79-1P, Isoprene-styrene block copolymer 700836-36-8P
RL: PREP (Preparation)
(triblock, rubber, recovery of, by steam stripping of solvents)

=> file uspatall caplus japio

| COST IN U.S. DOLLARS | SINCE FILE ENTRY | TOTAL SESSION |
|--|------------------|---------------|
| FULL ESTIMATED COST | 44.57 | 46.46 |
| DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) | SINCE FILE ENTRY | TOTAL SESSION |
| CA SUBSCRIBER PRICE | -2.40 | -2.40 |

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FILE 'JAPIO' ENTERED AT 17:52:54 ON 18 DEC 2008
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=> s steam(5a)strip? and (surfactant or surface(1a)active(1a)agent#)
L4 1672 STEAM(5A) STRIP? AND (SURFACTANT OR SURFACE(1A) ACTIVE(1A) AGENT #)

=> s (isobuten? or isobutylene?)(4a)(polymer# or copolymer#) or polyisobutylene# or polyisobutene#
L5 67088 (ISOBUTEN? OR ISOBUTYLEN?)(4A)(POLYMER# OR COPOLYMER#) OR POLYIS OBUTYLENE# OR POLYISOBUTENE#

=> s l4 and l5
L6 161 L4 AND L5

=> s (polymer# or copolymer#)(s)(surfactant# or surface(1a)active(1a)agent#)
L7 153556 (POLYMER# OR COPOLYMER#)(S)(SURFACTANT# OR SURFACE(1A) ACTIVE(1A) AGENT#)

=> s l6 and l7
L8 102 L6 AND L7

=> s (steam(6a)strip?)(s)(surfactant or surface(1a)active(1a)agent#)
L9 238 (STEAM(6A) STRIP?)(S)(SURFACTANT OR SURFACE(1A) ACTIVE(1A) AGENT #)

=> s l8 and l9
L10 8 L8 AND L9

=> d l10 1-8 ibib abs

L10 ANSWER 1 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2008:284382 USPATFULL
 TITLE: Partially neutralized chlorosulfonated polyolefin elastomers
 INVENTOR(S): Ennis, Royce Elton, Silsbee, TX, UNITED STATES
 Gadkari, Avinash C., Pearland, TX, UNITED STATES
 Glenn, Furman Eugene, Louisville, KY, UNITED STATES

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20080249243 | A1 | 20081009 |
| APPLICATION INFO.: | US 2008-75769 | A1 | 20080313 (12) |

| | NUMBER | DATE |
|-----------------------|--|---------------|
| PRIORITY INFORMATION: | US 2007-921582P | 20070403 (60) |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | DUPONT PERFORMANCE ELASTOMERS L.L.C., PATENT RECORDS CENTER, 4417 LANCASTER PIKE, BARLEY MILL PLAZA P25, WILMINGTON, DE, 19805, US | |

NUMBER OF CLAIMS: 8
 EXEMPLARY CLAIM: 1
 LINE COUNT: 490

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Partially neutralized chlorosulfonated polyolefin elastomers containing 0.5-10 weight percent chlorine and 0.25 to 5 weight percent sulfur are prepared from polyolefin elastomer base resins selected from the group consisting of propylene/ethylene copolymers, ethylene/propylene/diene copolymers, isobutylene/diene copolymers, isobutylene homopolymers, hydrogenated styrene/butadiene block copolymers and hydrogenated styrene/isoprene block copolymers.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 2 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2007:198286 USPATFULL
 TITLE: Method for producing isobutylene resin powder
 INVENTOR(S): Yoshimi, Tomoyuki, Hyogo, JAPAN
 Ohara, Koichiro, Hyogo, JAPAN
 Furukawa, Naoki, Hyogo, JAPAN

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20070173635 | A1 | 20070726 |
| APPLICATION INFO.: | US 2005-587636 | A1 | 20050119 (10) |
| | WO 2005-JP563 | | 20050119 |
| | | | 20060728 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|---|----------|
| PRIORITY INFORMATION: | JP 2004-20997 | 20040129 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | BRINKS HOFER GILSON & LIONE, P.O. BOX 10395, CHICAGO, IL, 60610, US | |
| NUMBER OF CLAIMS: | 6 | |
| EXEMPLARY CLAIM: | 1 | |
| NUMBER OF DRAWINGS: | 1 Drawing Page(s) | |
| LINE COUNT: | 546 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB It is an object of the present invention to provide a resin powder composed of an isobutylene polymer having low contents of a remaining solvent and a remaining monomer in a product. The present invention is accomplished by a method of removing a solvent while suspending the isobutylene polymer solution in water with a surfactant to obtain resin slurry, and subjecting the resin slurry to steam stripping at a temperature ranging from 150° C. to less than 180° C. to produce a resin powder without deterioration in quality, the resin powder having significantly low contents of the remaining solvent and remaining styrene in the resin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 3 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2007:183567 USPATFULL

TITLE: Personal care compositions containing cationically modified starch and an anionic surfactant system

INVENTOR(S): Staudigel, James Anthony, Loveland, OH, UNITED STATES
Peffly, Marjorie Mossman, Cincinnati, OH, UNITED STATES

| | NUMBER | KIND | DATE |
|-----------------------|--|------|---------------|
| PATENT INFORMATION: | US 20070160555 | A1 | 20070712 |
| APPLICATION INFO.: | US 2006-328302 | A1 | 20060109 (11) |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | APPLICATION | | |
| LEGAL REPRESENTATIVE: | THE PROCTER & GAMBLE COMPANY, INTELLECTUAL PROPERTY DIVISION - WEST BLDG., WINTON HILL BUSINESS CENTER - BOX 412, 6250 CENTER HILL AVENUE, CINCINNATI, OH, 45224, US | | |
| NUMBER OF CLAIMS: | 17 | | |
| EXEMPLARY CLAIM: | 1 | | |
| LINE COUNT: | 1372 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Personal care compositions comprise (a) from about 0.01 weight % to about 10 weight % of a water-soluble cationically modified starch polymer, wherein said water-soluble cationically modified starch polymer has a molecular weight from about 250,000 to about 15,000,000 and a charge density from about 0.2 meq/g to about 5 meq/g; (b) from about 5 weight % to about 50 weight % of an anionic surfactant system, said anionic surfactant system comprising at least one anionic surfactant and having an ethoxylate level and an anion level, (i) wherein said ethoxylate level is from about 1 to about 6, and (ii) wherein said anion level is from about 1 to about 6; and (c) a cosmetically acceptable medium. Personal care compositions as described above further comprise from about 0.01 weight % to about 10 weight % of one or more oily conditioning agents.

Methods of treating hair or skin comprise applying the personal care compositions as described above to the hair or skin and rinsing the hair or skin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 4 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2006:3426 USPATFULL

TITLE: Personal care compositions containing cationically

modified starch and an anionic surfactant system

INVENTOR(S): Peffly, Marjorie Mossman, Cincinnati, OH, UNITED STATES
 Pliego, Salvador, Mason, OH, UNITED STATES
 Staudigel, James Anthony, Cincinnati, OH, UNITED STATES
 Gizaw, Yonas, Cincinnati, OH, UNITED STATES

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20060002880 | A1 | 20060105 |
| APPLICATION INFO.: | US 2005-169827 | A1 | 20050629 (11) |

| | NUMBER | DATE |
|--|--|---------------|
| PRIORITY INFORMATION: | US 2004-585152P | 20040702 (60) |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | THE PROCTER & GAMBLE COMPANY, INTELLECTUAL PROPERTY DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL AVENUE, CINCINNATI, OH, 45224, US | |
| NUMBER OF CLAIMS: | 20 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 1427 | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |

AB Personal care compositions comprise (a) from about 0.01 weight % to about 10 weight % of a water-soluble cationically modified starch polymer, wherein said water-soluble cationically modified starch polymer has a molecular weight from about 1,000 to about 200,000 and a charge density from about 0.7 meq/g to about 7 meq/g; (b) from about 5 weight % to about 50 weight % of an anionic surfactant system, said anionic surfactant system comprising at least one anionic surfactant and having an ethoxylate level and an anion level, (i) wherein said ethoxylate level is from about 1 to about 6, and (ii) wherein said anion level is from about 1 to about 6; and (c) a cosmetically acceptable medium. Personal care compositions as described above further comprise from about 0.01 weight % to about 10 weight % of one or more oily conditioning agents. Methods of treating hair or skin comprise applying the personal care compositions as described above to the hair or skin and rinsing the hair or skin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 5 OF 8 USPATOLD on STN

ACCESSION NUMBER: 1973:70511 USPATOLD

TITLE: PREPARATION OF SULFUR SLURRIES FOR PIPELINE TRANSPORTATION

INVENTOR(S): COLLINS L
 QUINN R
 WILHELMSEN P

PATENT ASSIGNEE(S): SHELL OIL COMPANY

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3759836 | A | 19730918 |
| APPLICATION INFO.: | US 1971-180918 | | 19710901 |

| | NUMBER | DATE |
|-----------------------|----------------|----------|
| PRIORITY INFORMATION: | US 1971-180918 | 19710915 |

DOCUMENT TYPE: Utility
 FILE SEGMENT: GRANTED
 PRIMARY EXAMINER: PETERS, GEORGE O
 LINE COUNT: 138
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 6 OF 8 USPATOLD on STN
 ACCESSION NUMBER: 1973:68900 USPATOLD
 TITLE: PROCESS FOR THE RECOVERY OF RUBBERY POLYMERS IN CRUMB
 FORM
 INVENTOR(S): BROERING L
 PATENT ASSIGNEE(S): NATIONAL DISTILLERS AND CHEMICAL CORPORATION

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3751402 | A | 19730807 |
| APPLICATION INFO.: | US 1971-149043 | | 19710601 |

| | NUMBER | DATE |
|-----------------------|----------------|----------|
| PRIORITY INFORMATION: | US 1971-149043 | 19710601 |
| | US 1969-815723 | 19690414 |
| | US 1969-839332 | 19690707 |

DOCUMENT TYPE: Utility
 FILE SEGMENT: GRANTED
 PRIMARY EXAMINER: SCHOFER, JOSEPH L
 ASSISTANT EXAMINER: HAMROCK, W F
 LINE COUNT: 923
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 7 OF 8 USPATOLD on STN
 ACCESSION NUMBER: 1971:65249 USPATOLD
 TITLE: METHOD FOR OBTAINING POLYMER FROM POLYMER SOLUTION
 INVENTOR(S): HATTORI KENICHI
 KOMEDA YOSHIKI
 PATENT ASSIGNEE(S): KAO SOAP CO., LTD.

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3583967 | A | 19710608 |
| APPLICATION INFO.: | US 1968-781874 | | 19681201 |

| | NUMBER | DATE |
|-----------------------|-----------------|----------|
| PRIORITY INFORMATION: | DE 1969-1900106 | 19690102 |
| | GB 1968-59675 | 19681216 |
| | US 1968-781874 | 19681206 |

DOCUMENT TYPE: Utility
 FILE SEGMENT: GRANTED
 PRIMARY EXAMINER: SCHOFER, JOSEPH L
 LINE COUNT: 399
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L10 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:732675 CAPLUS
 DOCUMENT NUMBER: 143:194677
 TITLE: Method for producing isobutylene resin powder with

INVENTOR(S): reduced residual solvent and monomer
 Yoshimi, Tomoyuki; Ohara, Koichiro; Furukawa, Naoki
 PATENT ASSIGNEE(S): Kaneka Corporation, Japan
 SOURCE: PCT Int. Appl., 18 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|-----------------|------------|
| WO 2005073259 | A1 | 20050811 | WO 2005-JP563 | 20050119 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: | BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| EP 1712569 | A1 | 20061018 | EP 2005-703800 | 20050119 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS | | | |
| US 20070173635 | A1 | 20070726 | US 2006-587636 | 20060728 |
| PRIORITY APPLN. INFO.: | | | JP 2004-20997 | A 20040129 |
| | | | WO 2005-JP563 | W 20050119 |

AB Title method comprises (i) suspending an isobutylene polymer solution in water in the presence of a surfactant, (ii) removing the solvent and obtaining a resin slurry, and (iii) steam-stripping at 150-180°. Thus, 844 g isobutylene was polymerized in the presence of titanium tetrachloride in a mixture of 1-chlorobutane and hexane, 408 g styrene was added therein and polymerized to give a copolymer solution with number average mol. weight 100,000 and polydispersity 1.14, 12.5 L of which was suspended in 12.5 L water in the presence of polyethylene glycol monostearate and heated at 90° to evaporate solvent, cooled when the inner temperature was reached at 95°, the resulting slurry was steam-stripping at 152° for 60 min to give a resin slurry, which was centrifuged and extruded to give a pellet, showing residual monomer <1 ppm and tensile strength 18.4 MPa.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d 110 1 ibib hit

L10 ANSWER 1 OF 8 USPATFULL on STN
 ACCESSION NUMBER: 2008:284382 USPATFULL
 TITLE: Partially neutralized chlorosulfonated polyolefin elastomers
 INVENTOR(S): Ennis, Royce Elton, Silsbee, TX, UNITED STATES
 Gadkari, Avinash C., Pearland, TX, UNITED STATES
 Glenn, Furman Eugene, Louisville, KY, UNITED STATES

NUMBER KIND DATE

| | | | |
|---------------------|----------------|----|---------------|
| PATENT INFORMATION: | US 20080249243 | A1 | 20081009 |
| APPLICATION INFO.: | US 2008-75769 | A1 | 20080313 (12) |

| | NUMBER | DATE |
|--|--|---------------|
| PRIORITY INFORMATION: | US 2007-921582P | 20070403 (60) |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | DUPONT PERFORMANCE ELASTOMERS L.L.C., PATENT RECORDS CENTER, 4417 LANCASTER PIKE, BARLEY MILL PLAZA P25, WILMINGTON, DE, 19805, US | |
| NUMBER OF CLAIMS: | 8 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 490 | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |
| AB | Partially neutralized chlorosulfonated polyolefin elastomers containing 0.5-10 weight percent chlorine and 0.25 to 5 weight percent sulfur are prepared from polyolefin elastomer base resins selected from the group consisting of propylene/ethylene copolymers, ethylene/propylene/diene copolymers, isobutylene/diene copolymers, isobutylene homopolymers, hydrogenated styrene/butadiene block copolymers and hydrogenated styrene/isoprene block copolymers. | |
| SUMM | Isobutylene based elastomers (e.g. PIB and isobutylene/diene copolymers) have traditionally been used as modifying agents for motor oils and greases to enhance their utility at higher temperatures. | |
| SUMM | An aspect of the present invention is a chlorosulfonated polyolefin elastomer composition comprising at least one chlorosulfonated polyolefin elastomer having 0.5 to 10 weight percent chlorine and 0.25 to 5 weight percent sulfur, based on the total weight of said chlorosulfonated polyolefin elastomer, and a plurality of --SO.sub.3M groups, wherein M is a cation, and wherein each of said chlorosulfonated polyolefin elastomers present in said chlorosulfonated polyolefin elastomer composition is produced from a different polyolefin copolymer, said polyolefin copolymers being selected from the group consisting of propylene/ethylene copolymers, ethylene/propylene/diene copolymers, isobutylene/diene copolymers, isobutylene homopolymers, hydrogenated styrene/butadiene block copolymers and hydrogenated styrene/isoprene block copolymers. | |
| DETD | In the neutralization process, at least one chlorosulfonated polyolefin elastomer is first dissolved in a solvent such as carbon tetrachloride, tetrachloroethylene, xylene or mineral oil at about 40° C. Optionally, rather than starting with a solid chlorosulfonated polymer that must be dissolved, a solution of at least one chlorosulfonated polymer from the chlorosulfonation process described hereinafter (after degassing) can be utilized. A quantity of demineralized water is added to the solution. Next, an aqueous solution of a base, e.g. sodium hydroxide, is added to the copolymer solution and the resulting liquid mixed at high shear rate for the desired time. The amount of base added is typically between 0.5 and 2.5 molar equivalents of base per equivalent of --SO.sub.2Cl groups on the copolymer. Optionally, the base is added in the form of an emulsion comprising demineralized water, base, and compatibilizer (e.g. an ionic or non-ionic surfactant (such as sodium lauryl sulfate, Triton® X-100, etc.), sodium stearate, a metal rosin soap, or a quaternary ammonium salt) and a solvent (e.g. carbon tetrachloride, tetrachloroethylene or xylene). The resulting polymer may be | |

isolated by a variety of techniques such as precipitation by addition of a non-solvent (e.g. methanol or isopropanol) and then drying recovered polymer in a vacuum oven, or by steam stripping the solution to remove solvent and then drying recovered polymer in a vacuum oven. A preferred isolation process is drum drying where the polymer solution is contacted with a heated drum that flashes the solvent, depositing the polymer as a thin film that is removed to recover the polymer.

DETD The polyolefin elastomers employed as base resins to make the at least partially neutralized chlorosulfonated polyolefins of the invention are selected from the group consisting of propylene/ethylene copolymers, ethylene/propylene/diene copolymers, isobutylene/diene copolymers, isobutylene homopolymers, hydrogenated styrene/butadiene block copolymers and hydrogenated styrene/isoprene block copolymers. These copolymers may be semi-crystalline or amorphous.

DETD Specific commercially available examples of these polyolefin elastomers include, but are not limited to Versify® Plastomer and Elastomers (propylene/ethylene copolymers) and Nordel® EPDM (ethylene/propylene/diene copolymers), both available from The Dow Chemical Company; Vistamaxx® specialty elastomers (propylene/ethylene copolymers), Vistalon® EPDM (ethylene/propylene/diene copolymers), Exxon Butyl® (isobutylene/diene copolymers) and Vistanex® PIB (isobutylene homopolymers), available from ExxonMobil; and Kraton® G SEBS (hydrogenated styrene/butadiene block copolymers) & SEPS (hydrogenated styrene/isoprene block copolymers) from The Kraton company.

CLM What is claimed is:
 1. A chlorosulfonated polyolefin elastomer composition comprising at least one chlorosulfonated polyolefin elastomer having 0.5 to 10 weight percent chlorine and 0.25 to 5 weight percent sulfur, based on the total weight of said chlorosulfonated polyolefin elastomer, and a plurality of --SO₂sub.3M groups, wherein M is a cation, and wherein each of said chlorosulfonated polyolefin elastomers present in said chlorosulfonated polyolefin elastomer composition is produced from a different polyolefin copolymer, said polyolefin copolymers being selected from the group consisting of propylene/ethylene copolymers, ethylene/propylene/diene copolymers, isobutylene/diene copolymers, isobutylene homopolymers, hydrogenated styrene/butadiene block copolymers and hydrogenated styrene/isoprene block copolymers.

CLM What is claimed is:
 2. A chlorosulfonated polyolefin elastomer composition of claim 1 wherein said polyolefin copolymer is selected from the group consisting of propylene/ethylene copolymers, ethylene/propylene/diene copolymers, and isobutylene/diene copolymers

CLM What is claimed is:
 5. A chlorosulfonated polyolefin elastomer composition of claim 2 wherein said polyolefin copolymer is an isobutylene/diene copolymer.

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ACCESSION NUMBER: 1971:65249 USPATOLD
 TITLE: METHOD FOR OBTAINING POLYMER FROM POLYMER SOLUTION
 INVENTOR(S): HATTORI KENICHI
 KOMEDA YOSHIAKI
 PATENT ASSIGNEE(S): KAO SOAP CO., LTD.

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3583967 | A | 19710608 |
| APPLICATION INFO.: | US 1968-781874 | | 19681201 |

| | NUMBER | DATE |
|-----------------------|-----------------|----------|
| PRIORITY INFORMATION: | DE 1969-1900106 | 19690102 |
| | GB 1968-59675 | 19681216 |
| | US 1968-781874 | 19681206 |

DOCUMENT TYPE: Utility
 FILE SEGMENT: GRANTED
 PRIMARY EXAMINER: SCHOFER, JOSEPH L
 LINE COUNT: 399

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD When a polymer solution obtained by a solution-polymerization procedure is poured into water and the solvent is recovered by steam-stripping, if the polymer can be dispersed as fine particles in the water without forming lumps, it will be possible to convey an aqueous slurry of the polymer through conduits to a subsequent filtering process. Therefore, the solvent will be continuously stripped and it will be possible to continuously recover the polymer.

DETD The purpose of the present invention is to recover a rubber or a rubbery polymer from an organic solvent solution thereof by steam-stripping the solvent and forming an aqueous slurry in which said rubber or rubbery polymer is dispersed as fine particles.

DETD According to the present invention, a combination of the following-named two kinds of surface active agents is used to make it easy to disperse a polymerized substance, such as synthetic rubber, in water. That is to say, the present invention provides a method for obtaining a polymer from a polymer solution in which both an anionic surface active agent and a cationic surface active agent are added into the system when a solution of a synthetic rubber or other rubbery polymerized substance obtained by a solution-polymerization in an organic solvent is poured into heated water, so that the solvent is stripped and an aqueous slurry containing the polymerized substance in the form of dispersed fine particles is recovered.

DETD In the present invention, since no inorganic salt, such as Ca++, Ba++, Al++, etc. is used, the ash content of the rubber will not be increased. Further, the surface active agents used in the process of the present invention can also play the role of a dispersing assistant for a reinforcing agent, such as carbon black, in rubber and, therefore, there is no risk of deteriorating the rubber component.

DETD The purpose of the present invention can be attained by simultaneously using the following two kinds of surface active agents. That is to say, one of them is an anionic surface active agent and, particularly, an anionic watersoluble macromolecular substance having a plurality of carboxyl groups in the molecule, which will hereinafter be generally referred to as an anionic macromolecular surface active agent or an anionic macromolecular electrolyte.

The other is a cationic surface active agent (which term also includes a cationic water-soluble macromolecular surface active agent electrolyte).

DETD These two kinds of surface active agents, that is, an anionic active agent and a cationic active agent are used in the form of a mixture at an appropriate weight ratio of said agents. Generally, when both an anionic active agent and a cationic active agent are used, a precipitation will often occur. But, when an anionic active agent is used in excess and a cationic active agent is used in a smaller amount or vice versa, a solubilization effect will be caused and no precipitation will occur. Particularly, when a cationic surface active agent in an amount smaller than the equivalent is added into an anionic macromolecular electrolyte, or vice versa, no precipitation will occur. Therefore, in the practice of the present invention, such combinations of surface active agents are preferred.

DETD Referring to the drawing, a stripping tank 1 containing an aqueous solution, into which surface active agents are added, is heated by supplying steam from conduit 3. The temperature in the tank 1 is maintained at a higher value than the azeotropic temperature of the solvent of the polymer solution and water. For example, when the solvent of the polymer solution is toluene, a temperature of to C. in the tank 1 is optimum. A stirrer 2 in the tank 1 is rotated by a motor M. A polymerized rubber solution is fed into the tank 1 through a conduit 4 by means of a pump 5. The solvent, which is stripped by forming an azeotrope with water, will enter a separator after passing through a cooler 6. The solvent is recovered at conduit 8 and the water is separated at conduit 9.

DETD The rubber component which was precipitated and dispersed as fine particles in the water is conveyed through a valve by means of a pump 11 to a filter 12. The rubber particles are recovered at the filter 12. Since the filtrate flowing through conduit 13 still contains the surface active agents, it will be recycled to the stripping tank through conduit 14. Make-up surface active agents are supplied through conduit and a valve 16.

DETD The surface active agents used in the present invention will now be described more in detail.

DETD (A) As the anionic surface active agents, there can be used not only the so-called anionic surface active agents according to the strict definition in the classification of surface active agents, but also anionic water-soluble macromolecular substances which are particularly effective for the purpose of the present invention.

DETD (I) For the so-called anionic surface active agents, there can be used fatty acid salts (RCOONa), higher alcohol sulfates (ROS₃Na), liquid fatty oil sulfates [R(OSO₃Na)COORL sulfates of aliphatic amines and sulfates of aliphatic amides (RCONHRCH₂CH₃OSO₃Na).

DETD The values of R in the foregoing formulae can be any of those conventionally used in such anionic surface active agents and they are not critical.

DETD (II) For the anionic water-soluble macromolecular subAmine derivatives not made quaternary and amine oxides also can be used. The values of R, R_j and R₂ can be any of those conventionally used in such surface active agents and they are not critical. X identifies any salt which is usable stances, there can be used:

DETD (B) As the cationic surface active agents to be used together with the anionic surface active

agents, there can be used not only the so-called cationic active agents according to the strict definition in the classification of surface active agents, but also cationic macromolecular electrolytes.

DETD quaternary surface active agents derived from the above (1), their copolymers and polyacrylamide-type cationic surface active agents, for examples, $O=C$ HNCH₂

DETD Further, it will be more effective to use a macromolecular surface active agent, as disclosed above, as either the anionic surface active agent or the cationic surface active agent or for both of them. Generally, the surface active surface active agent produced by Kao Soap company, Ltd., (Japan) and 0.001% Quatamine 86P (trade name of a quaternary ammonium salt-type cationic surface active agent produced by Kao Soap Company, Ltd.) were agents used in the method are dissolved in an aqueous 5 placed in a four-necked flask of a capacity of 1 liter and solution in the stripper tank 1 in advance. However, if necessary, the surface active agent can be used by adding it into the solution of polymerized rubber in the solvent. Further, in the present invention, an amphoteric surface active agent, such as a high alkylalanine type or a betaine type, can be used in place of either the anionic surface active agent and the cationic surface active agent so that it is mixed with the anionic or cationic active agent. The pH is properly adjusted so that the amphoteric surface active agent were heated to C. The stirrer was rotated at R.P.M. and g. of a toluene solution containing 10% by weight synthetic rubber (polybutadiene rubber) were poured in through a pouring pipe into the vicinity of the blade of the stirrer. The pouring velocity was about 1. g./min. As the toluene of the solution of the polymerized rubber poured in was stripped by forming an azeotrope with water, the rubber component was precipitated in the water as fine particles. When the steam stripping of the live agent may act as a cationic or anionic surface active solvent was ended, the stirrer was stopped. The rubber agent to accomplish the purpose of the present invention. particles were suspended and they floated stably on the In carrying out the present invention, the amounts of surface of the water without adhering to each other, the surface active agents are each used usually in amounts When stirred, these rubber particles dispersed into the of from about 0.001 to parts by weight per parts water. Therefore, the aqueous slurry containing the rubweight of the polymerized rubbery substance to be ber particles under the stirring could be conveyed through recovered. However, depending on the kind of the active piping from the lower part of the stirrer to the filter agent used, a smaller amount of the surface active agent may be effective. Usually, 0.1 to 2.0 parts by weight of surface active agent are used per parts by weight of the polymerized rubber substance to be recovered.

DETD The effect of the surface active agents in the method of the present invention is to prevent the adhesion of the rubbery substance precipitated in the water, to disperse by means of a pump.

DETD Surface active agents

DETD EXAMPLE 3 Tests were made in the same manner as in Example 1, but using an amphoteric active agent instead of either of the anionic and cationic surface active agents. The pH of the aqueous solution was adjusted so that the amphoteric active agent might act

- either as the anionic or the cationic surface active agent. The results are listed in Table 2.
- DETD Surface active agents
- DETD NOTES.-Amphitol 24A-Higher alkylalanine-type amphoteric surface active agent produced by Kao Soap Company, Ltd.;
- Amphitol 60B=
- DETD EXAMPLE 1 Betaine-type amphoteric surface active agent produced by Kao Soap Company, Ltd.
- DETD EXAMPLE 4 500 cc. of an aqueous solution containing 0.02% 0.02% of an alkali-saponified styrene-maleic anhydride copolymer was used as a polycarboxylate-type anionic surface active agent together with various kinds of cationic surface active agents and the tests were made by using the same apparatus as in Example 1. The results are listed in Table 3.
- DETD TABLE 3 the free acids of the above, and an anionic watersoluble macromolecular surface active agent
- selected from the group consisting of polymers and copolymers
- DETD Surface active agents
- DETD TABLE 4 Surface active agents Anionic active agents Cationic active agents Dispersed state of the precipitated rubber 2-ethylhexylvinyl etherQuaternary 8SP, 0.003%. Good.
- DETD EXAMPLE 6 Experiments were carried with an n-hexane solution of 10% butyl rubber (an isoprene-isobutylene copolymer) by using the same apparatus as in Example 1. The results are shown in Table 5.
- DETD TABLE 6 mers of acrylic acid, polymers and copolymers of methacrylic acid and their salts, partially saponified water-soluble polymers and copolymers of acrylic acid esters, partially saponified water-soluble polymers and copolymers of methacrylic esters, polymers and copolymers of unsaturated dibasic acids, their diesters and monoesters, partially saponified polymers and copolymers of acrylamide and partially saponified polymers and copolymers of acrylonitrile, formalin condensates of ligninsulfonic acid and naphthalenesulfonic acid, formalin condensates of benzene sulfonic acid and formalin condensates of creosote oil sulfonate, and polymers and copolymers of vinyl sulfonic acid, and a cationic surface active agent selected from the group consisting of aliphatic amine salts, quaternary ammonium salts, alkylpyridinium salts, polyoxyethylene alkylamine salts, imidazoline derivatives, fatty acid amine derivatives (without quaternary amine), derivatives of polyamines such as diamines and triamines, and amine oxides, each of said anionic and said cationic surface active agent being used in the amount of from about 0.1 to 2.0 parts by weight per parts by weight of the polymer to be recovered and a sufficient excess of one surface active agent is used to avoid precipitation of surface active agent.
- CLM 2. A method according to claim 1, in which the anionic surface active agent is an anionic water-soluble macromolecular surface active agent.

Solution of polymerized synthetic rubber

Surface active agents

temperaDispersed state of the precipitated (inC.) rubber

Anionic active agents

Cationic active agents

Demole EP, 0.02%

.Quatamine 86P, 0.003%. .

85-90 Good.

do

85Do. 85-90 TIndispersed lumps.

Demole EP 0 02%

In the foregoing examples, all percentages are percentages by weight based on the weight of the polymerized rubber substance fed in.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a process for obtaining a polymer from a polymer solution which comprises feeding a solvent solution of a synthetic rubber polymer comprising a polymer or copolymer of butadiene or isoprene in an organic solvent into a body of agitated and heated water, steam stripping the solvent from the solution and recovering the polymer in the form of an aqueous slurry in which the polymer is dispersed as fine particles, the improvement which consists essentially of adding during said steam stripping both an anionic surface active agent selected from the group consisting of fatty acid salts, higher alcohol sulfates, liquid fatty oil sulfates, sulfates of aliphatic amines, sulfates of aliphatic amides, fatty alcohol phosphate esters, sulfonates of dibasic fatty acid esters, fatty acid amide sulfonates, alkylaryl sulfonates, 3. A method according to claim 1, in which said cationic surface active agent is selected from the group consisting of polyvinyl pyridine-type poly-soaps having the structure --CH-CH₂-CH-CH₂Hpolyacrylic ester-type cationic surface active agents having the structure f /a JOOCHuCHV-N their quaternized substances, their copolymers, and polyacrylamide-type cationic surface active agents.

FOREIGN PATENTS 3/1961 Great Britain_____260-94.7 JOSEPH L. SCHOFER,
Primary Examiner W. F. HAMROCK, Assistant Examiner U.S. Cl. X.R.

260-85.1,85.3,96

=> d 110 6 ibib hit

L10 ANSWER 6 OF 8 USPATOLD on STN

ACCESSION NUMBER: 1973:68900 USPATOLD

TITLE: PROCESS FOR THE RECOVERY OF RUBBERY POLYMERS IN CRUMB
FORM

INVENTOR(S): BROERING L

PATENT ASSIGNEE(S): NATIONAL DISTILLERS AND CHEMICAL CORPORATION

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3751402 | A | 19730807 |
| APPLICATION INFO.: | US 1971-149043 | | 19710601 |

| | NUMBER | DATE |
|-----------------------|----------------|----------|
| PRIORITY INFORMATION: | US 1971-149043 | 19710601 |
| | US 1969-815723 | 19690414 |
| | US 1969-839332 | 19690707 |

DOCUMENT TYPE: Utility
 FILE SEGMENT: GRANTED
 PRIMARY EXAMINER: SCHOFER, JOSEPH L
 ASSISTANT EXAMINER: HAMROCK, W F
 LINE COUNT: 923

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

- DETD Much work has been done in recent years in developing new processes for the production of rubbery polymer materials. Generally the rubbery polymers are formed in solution in a nonaqueous, volatile, inert hydrocarbon solvent for both the monomeric reactants and the polymeric product. The rubbery polymer products must then be recovered from such solutions in a solid particulate form suitable for further processing. It is frequently convenient to remove the solvent by steam-stripping, whereupon the rubbery polymer is dispersed in a water slurry, in crumb form. The crumb must then be separated from the water, and dried.
- DETD A portion of the solvent and monomer can be flashed off from the rubbery polymer solution before the steam distillation stage, and the partially stripped product is then subjected to steam stripping, or the reaction mixture can be subjected to steam-stripping directly.
- DETD The polymer crumb that is formed is frequently sticky, and difficult to handle, because it tends to agglomerate, forming large masses of polymer, and to stick to the stirrer and walls of the vessel. It has been suggested, in order to avoid this, that certain anionic surface active agents be added to the water before or during mixing with the polymer solution.
- DETD U.S. Pat. No. 3,042,637, to Crouch, dated July 3, 1962, proposes that an alkali metal lignin sulfonate be added to the steam-stripping zone prior to mixing with the hydrocarbon solution of the rubbery polymer.
- DETD Pat. No. 3,268,501 to Crouch et al., dated Aug. 23, 1966, proposes that an alkali metal salt of an alkyl sulfonate or an alkyl benzene sulfonate be added to the steam-stripping zone.
- DETD When the catalyst-containing solutions of the polymers, prepared using these alkali metal-containing catalysts, are mixed with water in the steam-stripping process, the alkali metal components of the catalysts are hydrolyzed, forming alkali metal hydroxide, which raises the pH in the steam-stripping mixture to or above. Under these highly basic conditions, the anionic surface active agents which have previously been proposed be added to the steam-stripping zone act as foaming agents; under high agitation during steam-stripping, the foam can reach a height of forty feet or more. The use of anionic surfactants becomes difficult if not impossible under such conditions.
- DETD In accordance with the present invention, it has now been determined that foam formation during steam-stripping and crumb formation of rubbery polymer reaction solutions containing alkali metal catalysts can be avoided and discrete, well-formed

non-sticky crumb particles obtained by steam-stripping of the rubbery polymer solvent solutions in the presence of both an alkali metal salt of an organic anionic surfactant and an organic polyoxy-alkylene glycol nonionic surfactant. ; This invention is applicable to the preparation of rubbery polymer crumb in a batch process or in a continuous process. The present invention is especially valuable in continuous processes, where coping with the continuing formation of large volumes of foam would be particularly difficult and costly. Polyvalent metal ions serve no useful function in the process of this invention.

DET D Steam-stripping, generally, of a rubbery polymer in a nonaqueous solution from the polymerization reaction zone, provides for steam-distilling the nonaqueous solution admixed with water. The nonaqueous solution can be mixed with hot water, at a temperature above the flash temperature to flash off the volatile portions of the solution. Sufficient steam is then injected into the mixture of the water and nonaqueous solution to heat it at a high enough temperature to permit the distilling off overhead of the volatiles, including solvent, and any monomer that may remain from the polymerization reaction. When the nonaqueous solution is mixed with water, if there are any alkali metals or their hydrolyzable compounds present, they will hydrolyze to the corresponding hydroxide, and, if an organoalkali metal catalyst is present in the nonaqueous solution, the free organic compound. The free organic compound is distilled off overhead with the volatiles.

DET D The process of this invention is especially useful for the recovery of rubbery alfin polymers, and especially, as stated above, for alfin polymers produced by a continuous or batch process. This process is especially useful for the steam-stripping of alfin polymers, which are prepared from a catalyst that contains two organoalkali metal compounds and a metal salt; the alfin catalysts are hydrolyzed to form a strongly basic crumb slurry and the process of this invention is especially useful in preventing the formation of foam during steam-stripping. The steam-stripping of an alfin polymer solution in a continuous alfin polymerization process can proceed as shown below. The same process can also be utilized for the steam-stripping of a rubbery polymer solution prepared using catalysts other than alfin catalysts.

DET D In this step, the alfin polymer is recovered as crumb from the reaction mixture, and any volatile materials are removed by flashing and a simultaneous steam-stripping. The operation is carried out in the presence of hot water. Volatile low polymer is also stripped. The alfin catalyst is hydrolyzed, and any olefin and alcohol released therefrom are removed as well, at this stage.

DET D As the first stage in the steam-stripping, the alfin polymer solvent solution withdrawn from the polymerization zone is blended with hot water in the presence of an alkali metal salt of an organic anionic surfactant, and preferably, both an alkali metal salt of an organic anionic surfactant and an organic polyoxyalkylene glycol nonionic surfactant. The water is preferably at a temperature above the steam distillation temperature of the solvent or diluent to be stripped. This temperature will also be above the boiling point of monomer, catalyst alcohol and catalyst olefin. The water is held at this temperature (inasmuch as the alfin polymer reaction solution is continuously being blended therewith in a crumb former or solvent stripper) by injection of steam. Thus, a true steam distillation of the volatiles is obtained in combination with a very rapid flashing of volatiles, due to the heat of the water when the water and reaction solution are blended. The alfin polymer precipitates from the polymer

solution as a wet finely divided crumb, which becomes suspended in the water.

- DETD The surfactants can be added to the alfin polymer reaction solution, to the hot water, or to the blend thereof. They can also be blended with the recycle water, or the make-up water and steam. The surfactants ensure formation of discrete well-formed, hard or nonsticky crumb particles that can be readily processed in the crumb-forming or solvent-stripping and in subsequent crumb-de-watering and crumb-drying steps without formation of foam during the steam-stripping.
- DETD The suspension of the polymer solution in water is simultaneously subjected to steam-stripping. Steam distillation is effected at a temperature within the range from about to about C., as a result of which the suspension can be brought to the boiling point of water.
- DETD The steam-stripping step is normally carried out under atmospheric pressure. However, it may be desirable to employ sub or super atmospheric pressures, in order to achieve lower or higher stripping temperatures, and good crumb formation.
- DETD The time required to remove the volatiles depends to some extent on the amount and type of volatiles and the physical characteristics of the alfin polymer being processed. Usually, from about 2 to about minutes are adequate. For example, an alfin copolymer of butadiene and styrene, containing from about to about 98 weight percent of butadiene, can be recovered from solution in hexane wherein the polymer concentration is about 10%, as an essentially solvent-free rubber crumb, that is, containing less than about 0.5% hexane, by steam-stripping at a temperature of from about to about F. for about 3 minutes to a half hour. If desired, as an alternative procedure, the alfin polymer reaction solution can first be subjected to a water-washing treatment, preferably passing the reaction solution and the wash water countercurrently to each other, thereby removing isopropanol and water-soluble salts, and facilitating the production of a polymer having an extremely low ash content. The washing step is not necessary in most cases, however. If it is used, it can be carried out by passing the alfin polymer solution and water countercurrently, and passing the wet polymer solution to a separation zone, where the water separates out as an aqueous phase containing water-soluble im3,75i, 7 purities, leaving the alfin polymer solution. The alfin polymer solution is then passed to the steam-stripping zone.
- DETD The organic anionic surfactant is characterized by a mixed hydrophobic-hydrophilic character, arising from the presence of a hydrophobic portion of relatively high molecular weight, and one or more hydrophilic -COOM, -OSO3M or .-SO3M groups (M is an alkali metal), attached to the hydrophobic portion. There are two general types, classified according to whether the hydrophobic portion is aliphatic or aromatic in nature.
- DETD The aromatic anionic surfactants have an -SO3M group attached to an aromatic ring, such as a benzene or naphthalene ring, and an aliphatic group can also be attached to the aromatic ring, desirably having a sufficiently long chain to impart a more hydrophobic character to the aromatic ring. Benzene rings may require longer chain aliphatic groups than naphthalene rings for high hydrophobicity; in the case of benzene, the aliphatic group has from about one to about thirty carbon atoms, preferably from twelve to eighteen carbon atoms, whereas in the case of naphthalene no aliphatic group is necessary, and, if present, the aliphatic group can have from one to twenty-four carbon atoms, preferably from four to twelve carbon atoms. The -SO3M group is in the form of the alkali metal (sodium or potassium) salt. The ammonium salts can be used; these form the sodium salts in situ, upon liberation of

- e.g., sodium hydroxide from the alfin polymer and alfin catalyst in the presence of water; ammonia may be liberated, and driven off with the volatiles.
- DETD A special class are the polymeric polyaryl sulfonates, containing a polymeric chain of a molecular weight from upwards of 10,000 or more, preferably from 5,000, bearing aryl units such as benzene or naphthalene rings or both, as an integral part of the chain or as side groups. The aryl units are linked in a polymeric chain by linking groups, such as alkylene groups, for example, methylene, or oxygen groups, or are directly linked by condensation to each other, by single bonds, or are attached as substituents to a polyalkylene chain, such as polyethylene, polypropylene, or polyisobutylene. The sul-fonic acid groups are attached to the aryl groups.
- DETD The aliphatic surfactants have an -OSO₃Na or -COOM group or groups, attached to an aliphatic chain. The aliphatic chain has from eight to about thirty carbon atoms, preferably from twelve to about eighteen carbon atoms, but it can also be a high polymer chain having a molecular weight from upwards of 10,000 or more, preferably from 5,000.
- DETD Exemplary aromatic surfactants are the sodium polypropylene benzene sulfonates (U.S. Pat. No. 2,477,383 to Lewis), sodium keryl benzene sulfonates (derived from condensation of kerosene and benzene), sodium xylene sulfonate, sodium toluene sulfonate, sodium poly(methyl-ene naphthalene) sulfonate, sodium dodecyl naphthalene sulfonate, sodium polypropylene naphthalene sulfonate, and sodium keryl naphthalene sulfonate.
- DETD Exemplary aliphatic surfactants are sodium lauryl sul-fate, sodium stearyl sulfate, and sodium palmityl sulfate.
- DETD The potassium salts of these surfactants can also be used, but are more expensive. Ammonium salts can be used, and will form the alkali metal salts in situ; so also will the free acid form of these surfactants.
- DETD The anionic surfactant can be used in an amount within the range from about 0.02 to about 2% by weight of the rubbery polymer. Preferably, from about 0.05 to about 0.5% is used.
- DETD The nonionic surfactant is of the polyoxyalkylene glycol type, and the term "polyoxyalkylene glycol" encompasses the polyoxyalkylene glycols and their condensation products with other alkylene oxide-reactive or alkylene glycol-reactive organic compounds, including phenols, amines, oxides, amides, and ethers as used herein.
- DETD Certain nonionic surfactants are more active than oth-
- DETD The anionic surfactant aids in the formation of the polymer crumb composed of hard, non-sticky well-shaped particles. The nonionic surfactant improves the effectiveness of the anionic surfactant in this respect, in addition to suppressing the foaming of the crumb slurry (which tends to be enhanced by the anionic surfactant in the presence of the basic hydrolysis product) during steam stripping and subsequent processing steps.
- DETD The rubber crumb is first separated from the water dispersant by running the suspension through a screen. The crumb may be water washed to leach out any residual surfactant and water-soluble salts present in the crumb. The polymer crumb from the screen can then be brought to an expeller, which by means of screw compression reduces the water content to below approximately 15%. The remaining water and any solvent can be removed by flashing, compressing the rubber in an expander, so as to heat it, and then releasing the pressure suddenly so that water as steam and solvent flash off. The water is separated, and some is recycled, while some is purged, since 3,751, 11 this wash water contains salts and build up of salts must be avoided. The final product

from the expander can be baled, and is ready for distribution and/or use.

DETD Rubber cement, for example alfin rubber cement, containing approximately 7 to weight percent rubber from the polymerizer reactors flows via line 7 to the alfin cement blend tank 8. Anionic surfactant and nonionic surfactant are added at tank 8. The blend is continuously charged to the first of two solvent strippers, 11, 11. It is mixed with hot recycled water entering via line 17 so that a suspension of alfin cement in water results. The resultant mixture which has a pH of 14 enters the solvent stripper 11, a vessel equipped with a stirrer 27 and overhead collection line 12 running to condenserfractionator for recycling the solvent, if desired. The water is hot enough to flash some of the solvent. Steam is injected via line 19 to effect a steam distillation, and heat the mixture to a temperature of about F., while the mixture is stirred. Substantially no foam forms, while 23 solvent vapors escape via line 12. A slurry of alfin rubber crumb results, and the crumb is in the form of discrete, well-formed, hard particles, due to the presence of surfactant. The rubber slurry is removed from below and is sent via line 18 to the second stage solvent stripper 11, 3Q which is similar to the first stage. Most of the solvent is removed in the first stage, and the rubber entering the second stage has for example a solvent content of the order of 5 to weight percent, based on the alfin rubber content.

DETD The product vapor stream in line 12 contains the un-condensed steam and essentially all the hydrocarbons that were present with the exception of the rubber. In addition, it contains propylene, formed by decomposition of the alfin catalyst with water to form sodium hydroxide. It also contains isopropyl alcohol, formed by hydrolysis of the sodium isopropoxide. The rubber crumb contains a small amount of solvent. The quantity of solvent in the crumb at this stage should be kept to a minimum by appropriate adjustment of the steam stripping conditions.

DETD The rubber crumb which is present in the form of small particles and contains approximately weight percent water and which is raked out enters a dewatering screen separator via a chute 26. In the chute, the rubber crumb is contacted with a stream of water. The addition of water at this point reduces the residual surfactant and the salt content of the rubber crumb. The underflow from the screen consists essentially of water containing a small amount of rubber fines, and is withdrawn and pumped to a secondary fines settler 28. Rubber crumb is allowed to overflow from the upper portion of this vessel, and passes via line 29 back on to the screen separator 25. The underflow consists of water containing dissolved salts, and is purged.

DETD FIG. 2 shows another embodiment of a steam stripping system useful for the continuous or batch formation of a ! rubbery polymer crumb.

DETD The rubbery polymer solution, for example, an alfin polymer prepared from an alfin sodium catalyst, is fed from the reaction zone to solvent stripper through line 78. Hot water containing anionic surfactant and nonionic I surfactant, and steam are passed into the solvent stripper through lines 82 and 84, respectively. The operation of the solvent stripper is such as to result in continuous vaporization of the solvent by mixing of the polymer solution in hot water while simultaneously steam distilling the ! solvent, thereby forming an alkaline slurry of pH to 14 of the polymer crumb in water. Substantially no foam is formed. In the embodiment shown, the polymer crumb which is in the form of discrete, well-formed, hard particles due to the presence of the surfactants, overflows at I the liquid operating level of the solvent stripper 80, which may be adjusted to provide the retention

time required to completely remove the solvent. The crumb is withdrawn through overflow pipe 88 to a screening operation. The crumb-water slurry passing through overflow pipe 188 is sent to product screen tank into which wash water is also passed through line 92. The water is withdrawn from tank via line 96, and part is recycled to the solvent stripper and part is purged. The washed polymer crumb is removed from the screen tank 90, and may then be passed through subsequent stages such as drying, milling packaging.

DETD A solution was formed of Tamol 731 (sodium salt of the copolymer of maleic anhydride and diisobutylene) and Pluronic L-1 (polyoxypropylene oxyethylene glycol) in the hot water fed into the steam stripper 80, (referring to FIG. 2) sufficient to provide 0.25% Tamol 731 and 0.25% L-61 by weight of the alfin polymer. The crumb slurry had a pH of about 12. Foaming was suppressed, and a hard, small-particle crumb resulted.

CLM Having regard to the foregoing disclosure, the following is claimed as the inventive and patentable embodiments thereof:

1. In the continuous process for the preparation of alfin polymers from alfin polymerizable monomers, comprising continuously blending an organic unsaturated alfin polymerizable monomer, alfin catalyst, molecular weight moderator and solvent, to form a reaction mixture substantially free from polyvalent metal cations, continuously effecting the polymerization of alfin monomer at an elevated temperature, continuously separating volatile materials including unreacted monomer, volatile low polymer, and solvent from the alfin polymer reaction mixture by quenching the reaction mixture from the resulting dispersion, thereby forming an alfin polymer crumb and slurry in water having a pH of greater than 10, and thereafter recovering solvent and, if desired, monomer, for reuse, and washing and drying the alfin polymer, the improvement which comprises forming the crumb slurry in the presence of from about 0.02 to about 2% by weight of polymer of an alkali metal salt of an anionic surfactant having a hydrophobic portion of relatively high molecular weight and attached to the hydrophobic portion at least one hydrophilic group selected from the group consisting of -COOM; -OSO₃M; and -SO₃M groups, wherein M is an alkali metal or ammonium; the hydrophobic portion being selected from the group consisting of aromatic; aliphatic; and aliphatic-substituted aromatic groups in which the aliphatic group has from about one to about thirty carbon atoms; sufficient to obtain a dispersion of hard, discrete crumb particles of the rubbery polymer in water, and to foam the alkaline aqueous phase during the steam-stripping, and a nonionic surfactant selected from the group consisting of polyoxyalkylene glycols and their condensation products with alkylene oxide-reactive and alkylene glycol-reactive organic compounds selected from the group consisting of phenols, amines, alkylene oxides, amides and ethers in an amount from about 0.02 to about 2% by weight of the polymer to suppress the formation of foam during the steam-stripping.

2. The process of claim 1 wherein the anionic surfactant is an alkali metal poly(methylene naphthalene) sulfonate having a molecular weight from about 10,000, the naphthalene groups being linked in a polymeric chain by the methylene groups, and the sulfonate groups being linked to the naphthalene groups.

..402 .DIENE, 15% STYEENE

Total

86.4:13.6 !

i 132

60-65

3. The process of claim 1 wherein the nonionic surfactant is a polyoxyethyleneoxypropylene glycol having the formula $\text{HOCCaHOCmHnOCCaHyH}$ wherein x, y, m, and n are integers, and when (CmHnO) is saturated aliphatic, n is 2m.

- 4. The process of claim 1 wherein the polymer concentration in the reaction mixture is within the range of from about 2 to about weight percent.

5. The process of claim 1 wherein the rubbery polymer solution contains an alfin catalyst in an amount sufficient) to increase the pH of the aqueous phase to from about 11 to about 14 when hydrolyzed by water during the steam-stripping.

6. The process of claim 1 wherein the nonionic surfactant is a sodium salt of a copolymer of di-isobutylene and maleic anhydride.

7. The process of claim 1 wherein the anionic surfactant is an alkali metal poly(methylene naphthalene) sul-fonate having a molecular weight from to about 10,000, the naphthalene groups being linked in a polymeric chain by methylene groups, and the sulfonate groups being linked to the naphthalene groups, and the nonionic surfactant is a polyoxyethyleneoxypropylene glycol having the formula $\text{HO(C2H4O)y(C3H6O)x(C2H4O)y}$ wherein x, y, m, and n are integers.

8. A process in accordance with claim 1 in which the alfin catalyst comprises a sodium compound of a methyl n-alkyl carbinol and a sodium alkenyl compound.

9. The process of claim 8, wherein the alfin catalyst is sodium allyl-sodium isopropoxide-sodium chloride.

10. The process of claim 1 wherein the polymer is a 1 homopolymer of butadiene.

11. The process of claim 1 wherein the polymer is a copolymer of butadiene and isoprene.

12. The process of claim 1 wherein the polymer is a I homopolymer of isoprene.

13. The process of claim 1 wherein the polymer is a copolymer of butadiene and styrene.

14. The process of claim 1 wherein the steam-stripping is carried out at a temperature within the range of from about to about C.

15. A process in accordance with claim 1 in which the rubbery polymer solution is mixed with hot water at from about to about C. which causes the separation of volatile materials from the alfin polymer solution.

(References on following page)

| | | |
|--|------------|---------|
| => FIL STNGUIDE | | |
| COST IN U.S. DOLLARS | SINCE FILE | TOTAL |
| | ENTRY | SESSION |
| FULL ESTIMATED COST | 100.77 | 147.23 |
| DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) | SINCE FILE | TOTAL |
| | ENTRY | SESSION |
| CA SUBSCRIBER PRICE | -0.80 | -3.20 |

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FILE CONTAINS CURRENT INFORMATION.
 LAST RELOADED: Dec 12, 2008 (20081212/UP).

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| => file uspatall caplus japio | | |
| COST IN U.S. DOLLARS | SINCE FILE | TOTAL |
| | ENTRY | SESSION |
| FULL ESTIMATED COST | 0.78 | 148.01 |
| DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) | SINCE FILE | TOTAL |
| | ENTRY | SESSION |
| CA SUBSCRIBER PRICE | 0.00 | -3.20 |

FILE 'USPATFULL' ENTERED AT 18:13:16 ON 18 DEC 2008
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FILE 'USPATOLD' ENTERED AT 18:13:16 ON 18 DEC 2008
 CA INDEXING COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'USPAT2' ENTERED AT 18:13:16 ON 18 DEC 2008
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(FILE 'HOME' ENTERED AT 17:36:02 ON 18 DEC 2008)
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 SET PLURALS ON PERM

FILE 'INPADOCDB, JAPIO, CAPLUS' ENTERED AT 17:41:39 ON 18 DEC 2008

| | |
|----|---------------------|
| L1 | 2 S JP 60-127303/PN |
| L2 | 2 S JP 8-301929/PN |
| L3 | 2 S JP 1-182308/PN |

FILE 'USPATFULL, USPATOLD, USPAT2, CAPLUS, JAPIO' ENTERED AT 17:52:54 ON
 18 DEC 2008

| | |
|----|--|
| L4 | 1672 S STEAM(5A)STRIP? AND (SURFACTANT OR SURFACE(1A)ACTIVE(1A)AGENT |
|----|--|

S/N 10/587,636

L5 67088 S (ISOBUTEN? OR ISOBUTYLEN?) (4A) (POLYMER# OR COPOLYMER#) OR POL
L6 161 S L4 AND L5
L7 153556 S (POLYMER# OR COPOLYMER#) (S) (SURFACTANT# OR SURFACE(1A) ACTIVE(
L8 102 S L6 AND L7
L9 238 S (STEAM(6A) STRIP?) (S) (SURFACTANT OR SURFACE(1A) ACTIVE(1A) AGENT
L10 8 S L8 AND L9

FILE 'STNGUIDE' ENTERED AT 18:05:37 ON 18 DEC 2008

FILE 'USPATFULL, USPATOLD, USPAT2, CAPLUS, JAPIO' ENTERED AT 18:13:16 ON
18 DEC 2008

=> s l9 and l5

L11 8 L9 AND L5

=> d l11 1-8 ibib abs

L11 ANSWER 1 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2008:284382 USPATFULL
TITLE: Partially neutralized chlorosulfonated polyolefin
elastomers
INVENTOR(S): Ennis, Royce Elton, Silsbee, TX, UNITED STATES
Gadkari, Avinash C., Pearland, TX, UNITED STATES
Glenn, Furman Eugene, Louisville, KY, UNITED STATES

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20080249243 | A1 | 20081009 |
| APPLICATION INFO.: | US 2008-75769 | A1 | 20080313 (12) |

| | NUMBER | DATE |
|-----------------------|--|---------------|
| PRIORITY INFORMATION: | US 2007-921582P | 20070403 (60) |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | DUPONT PERFORMANCE ELASTOMERS L.L.C., PATENT RECORDS CENTER, 4417 LANCASTER PIKE, BARLEY MILL PLAZA P25, WILMINGTON, DE, 19805, US | |
| NUMBER OF CLAIMS: | 8 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 490 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Partially neutralized chlorosulfonated polyolefin elastomers containing
0.5-10 weight percent chlorine and 0.25 to 5 weight percent sulfur are
prepared from polyolefin elastomer base resins selected from the group
consisting of propylene/ethylene copolymers,
ethylene/propylene/diene copolymers, isobutylene
/diene copolymers, isobutylene homopolymers,
hydrogenated styrene/butadiene block copolymers and hydrogenated
styrene/isoprene block copolymers.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L11 ANSWER 2 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2007:198286 USPATFULL
TITLE: Method for producing isobutylene resin powder
Yoshimi, Tomoyuki, Hyogo, JAPAN
INVENTOR(S): Ohara, Koichiro, Hyogo, JAPAN
Furukawa, Naoki, Hyogo, JAPAN

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20070173635 | A1 | 20070726 |
| APPLICATION INFO.: | US 2005-587636 | A1 | 20050119 (10) |
| | WO 2005-JP563 | | 20050119 |
| | | | 20060728 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|---|----------|
| PRIORITY INFORMATION: | JP 2004-20997 | 20040129 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | BRINKS HOFER GILSON & LIONE, P.O. BOX 10395, CHICAGO, IL, 60610, US | |
| NUMBER OF CLAIMS: | 6 | |
| EXEMPLARY CLAIM: | 1 | |
| NUMBER OF DRAWINGS: | 1 Drawing Page(s) | |
| LINE COUNT: | 546 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB It is an object of the present invention to provide a resin powder composed of an isobutylene polymer having low contents of a remaining solvent and a remaining monomer in a product. The present invention is accomplished by a method of removing a solvent while suspending the isobutylene polymer solution in water with a surfactant to obtain resin slurry, and subjecting the resin slurry to steam stripping at a temperature ranging from 150° C. to less than 180° C. to produce a resin powder without deterioration in quality, the resin powder having significantly low contents of the remaining solvent and remaining styrene in the resin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L11 ANSWER 3 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2007:183567 USPATFULL
 TITLE: Personal care compositions containing cationically modified starch and an anionic surfactant system
 INVENTOR(S): Staudigel, James Anthony, Loveland, OH, UNITED STATES
 Peffly, Marjorie Mossman, Cincinnati, OH, UNITED STATES

| | NUMBER | KIND | DATE |
|-----------------------|--|------|---------------|
| PATENT INFORMATION: | US 20070160555 | A1 | 20070712 |
| APPLICATION INFO.: | US 2006-328302 | A1 | 20060109 (11) |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | APPLICATION | | |
| LEGAL REPRESENTATIVE: | THE PROCTER & GAMBLE COMPANY, INTELLECTUAL PROPERTY DIVISION - WEST BLDG., WINTON HILL BUSINESS CENTER - BOX 412, 6250 CENTER HILL AVENUE, CINCINNATI, OH, 45224, US | | |
| NUMBER OF CLAIMS: | 17 | | |
| EXEMPLARY CLAIM: | 1 | | |
| LINE COUNT: | 1372 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Personal care compositions comprise (a) from about 0.01 weight % to about 10 weight % of a water-soluble cationically modified starch polymer, wherein said water-soluble cationically modified starch polymer has a molecular weight from about 250,000 to about 15,000,000 and a charge density from about 0.2 meq/g to about 5 meq/g; (b) from about 5 weight % to about 50 weight % of an anionic surfactant system, said anionic surfactant

system comprising at least one anionic surfactant and having an ethoxylate level and an anion level, (i) wherein said ethoxylate level is from about 1 to about 6, and (ii) wherein said anion level is from about 1 to about 6; and (c) a cosmetically acceptable medium. Personal care compositions as described above further comprise from about 0.01 weight % to about 10 weight % of one or more oily conditioning agents.

Methods of treating hair or skin comprise applying the personal care compositions as described above to the hair or skin and rinsing the hair or skin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L11 ANSWER 4 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2006:3426 USPATFULL

TITLE: Personal care compositions containing cationically modified starch and an anionic surfactant system
 INVENTOR(S): Peffly, Marjorie Mossman, Cincinnati, OH, UNITED STATES
 Pliego, Salvador, Mason, OH, UNITED STATES
 Staudigel, James Anthony, Cincinnati, OH, UNITED STATES
 Gizaw, Yonas, Cincinnati, OH, UNITED STATES

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20060002880 | A1 | 20060105 |
| APPLICATION INFO.: | US 2005-169827 | A1 | 20050629 (11) |

| | NUMBER | DATE |
|-----------------------|--|---------------|
| PRIORITY INFORMATION: | US 2004-585152P | 20040702 (60) |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | THE PROCTER & GAMBLE COMPANY, INTELLECTUAL PROPERTY DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL AVENUE, CINCINNATI, OH, 45224, US | |
| NUMBER OF CLAIMS: | 20 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 1427 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Personal care compositions comprise (a) from about 0.01 weight % to about 10 weight % of a water-soluble cationically modified starch polymer, wherein said water-soluble cationically modified starch polymer has a molecular weight from about 1,000 to about 200,000 and a charge density from about 0.7 meq/g to about 7 meq/g; (b) from about 5 weight % to about 50 weight % of an anionic surfactant system, said anionic surfactant system comprising at least one anionic surfactant and having an ethoxylate level and an anion level, (i) wherein said ethoxylate level is from about 1 to about 6, and (ii) wherein said anion level is from about 1 to about 6; and (c) a cosmetically acceptable medium. Personal care compositions as described above further comprise from about 0.01 weight % to about 10 weight % of one or more oily conditioning agents. Methods of treating hair or skin comprise applying the personal care compositions as described above to the hair or skin and rinsing the hair or skin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L11 ANSWER 5 OF 8 USPATOLD on STN

ACCESSION NUMBER: 1973:70511 USPATOLD

TITLE: PREPARATION OF SULFUR SLURRIES FOR PIPELINE TRANSPORTATION

INVENTOR(S): COLLINS L
QUINN R
WILHELMSEN P
PATENT ASSIGNEE(S): SHELL OIL COMPANY

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3759836 | A | 19730918 |
| APPLICATION INFO.: | US 1971-180918 | | 19710901 |

| | NUMBER | DATE |
|--|------------------|----------|
| PRIORITY INFORMATION: | US 1971-180918 | 19710915 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | GRANTED | |
| PRIMARY EXAMINER: | PETERS, GEORGE O | |
| LINE COUNT: | 138 | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |

L11 ANSWER 6 OF 8 USPATOLD on STN
ACCESSION NUMBER: 1973:68900 USPATOLD
TITLE: PROCESS FOR THE RECOVERY OF RUBBERY POLYMERS IN CRUMB FORM
INVENTOR(S): BROERING L
PATENT ASSIGNEE(S): NATIONAL DISTILLERS AND CHEMICAL CORPORATION

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3751402 | A | 19730807 |
| APPLICATION INFO.: | US 1971-149043 | | 19710601 |

| | NUMBER | DATE |
|--|-------------------|----------|
| PRIORITY INFORMATION: | US 1971-149043 | 19710601 |
| | US 1969-815723 | 19690414 |
| | US 1969-839332 | 19690707 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | GRANTED | |
| PRIMARY EXAMINER: | SCHOFER, JOSEPH L | |
| ASSISTANT EXAMINER: | HAMROCK, W F | |
| LINE COUNT: | 923 | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |

L11 ANSWER 7 OF 8 USPATOLD on STN
ACCESSION NUMBER: 1971:65249 USPATOLD
TITLE: METHOD FOR OBTAINING POLYMER FROM POLYMER SOLUTION
INVENTOR(S): HATTORI KENICHI
KOMEDA YOSHIKI
PATENT ASSIGNEE(S): KAO SOAP CO., LTD.

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3583967 | A | 19710608 |
| APPLICATION INFO.: | US 1968-781874 | | 19681201 |

| | NUMBER | DATE |
|-----------------------|-----------------|----------|
| PRIORITY INFORMATION: | DE 1969-1900106 | 19690102 |

GB 1968-59675 19681216
 US 1968-781874 19681206

DOCUMENT TYPE: Utility
 FILE SEGMENT: GRANTED
 PRIMARY EXAMINER: SCHOFER, JOSEPH L
 LINE COUNT: 399
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L11 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:732675 CAPLUS

DOCUMENT NUMBER: 143:194677

TITLE: Method for producing isobutylene resin powder with reduced residual solvent and monomer

INVENTOR(S): Yoshimi, Tomoyuki; Ohara, Koichiro; Furukawa, Naoki

PATENT ASSIGNEE(S): Kaneka Corporation, Japan

SOURCE: PCT Int. Appl., 18 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|-----------------|------------|
| WO 2005073259 | A1 | 20050811 | WO 2005-JP563 | 20050119 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MY, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: | BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| EP 1712569 | A1 | 20061018 | EP 2005-703800 | 20050119 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS | | | |
| US 20070173635 | A1 | 20070726 | US 2006-587636 | 20060728 |
| PRIORITY APPLN. INFO.: | | | JP 2004-20997 | A 20040129 |
| | | | WO 2005-JP563 | W 20050119 |

AB Title method comprises (i) suspending an isobutylene polymer solution in water in the presence of a surfactant, (ii) removing the solvent and obtaining a resin slurry, and (iii) steam-stripping at 150-180°. Thus, 844 g isobutylene was polymerized in the presence of titanium tetrachloride in a mixture of 1-chlorobutane and hexane, 408 g styrene was added therein and polymerized to give a copolymer solution with number average mol. weight 100,000 and polydispersity 1.14, 12.5 L of which was suspended in 12.5 L water in the presence of polyethylene glycol monostearate and heated at 90° to evaporate solvent, cooled when the inner temperature was reached at 95°, the resulting slurry was steam-stripping at 152° for 60 min to give a resin slurry, which was centrifuged and extruded to give a pellet, showing residual monomer <1 ppm and tensile strength 18.4 MPa.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

S/N 10/587,636

=> FIL STNGUIDE
COST IN U.S. DOLLARS

| SINCE FILE | TOTAL |
|------------|---------|
| ENTRY | SESSION |
| 24.64 | 172.65 |

FULL ESTIMATED COST

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

| SINCE FILE | TOTAL |
|------------|---------|
| ENTRY | SESSION |
| -0.80 | -4.00 |

CA SUBSCRIBER PRICE

FILE 'STNGUIDE' ENTERED AT 18:17:18 ON 18 DEC 2008
USE IS SUBJECT TO THE TERMS OF YOUR CUSTOMER AGREEMENT
COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

FILE CONTAINS CURRENT INFORMATION.

LAST RELOADED: Dec 12, 2008 (20081212/UP).

=> d his

(FILE 'HOME' ENTERED AT 17:36:02 ON 18 DEC 2008)

SET ABBR ON PERM
SET PLURALS ON PERM

FILE 'INPADOCDB, JAPIO, CAPLUS' ENTERED AT 17:41:39 ON 18 DEC 2008

L1 2 S JP 60-127303/PN
L2 2 S JP 8-301929/PN
L3 2 S JP 1-182308/PN

FILE 'USPATFULL, USPATOLD, USPAT2, CAPLUS, JAPIO' ENTERED AT 17:52:54 ON
18 DEC 2008

L4 1672 S STEAM(5A)STRIP? AND (SURFACTANT OR SURFACE(1A)ACTIVE(1A)AGENT
L5 67088 S (ISOBUTEN? OR ISOBUTYLEN?) (4A) (POLYMER# OR COPOLYMER#) OR POL
L6 161 S L4 AND L5
L7 153556 S (POLYMER# OR COPOLYMER#) (S) (SURFACTANT# OR SURFACE(1A)ACTIVE(
L8 102 S L6 AND L7
L9 238 S (STEAM(6A)STRIP?) (S) (SURFACTANT OR SURFACE(1A)ACTIVE(1A)AGENT
L10 8 S L8 AND L9

FILE 'STNGUIDE' ENTERED AT 18:05:37 ON 18 DEC 2008

FILE 'USPATFULL, USPATOLD, USPAT2, CAPLUS, JAPIO' ENTERED AT 18:13:16 ON
18 DEC 2008

L11 8 S L9 AND L5

FILE 'STNGUIDE' ENTERED AT 18:17:18 ON 18 DEC 2008

=> s (isobuten? or isobutylene?) (4a) (polymer# or copolymer# or resin#)

0 ISOBUTEN?
0 ISOBUTYLEN?
40 POLYMER#
0 COPOLYMER#
3 RESIN#

L12 0 (ISOBUTEN? OR ISOBUTYLEN?) (4A) (POLYMER# OR COPOLYMER# OR RESIN#)

=> file uspatall caplus japio

COST IN U.S. DOLLARS

| SINCE FILE | TOTAL |
|------------|---------|
| ENTRY | SESSION |
| 0.66 | 173.31 |

FULL ESTIMATED COST

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

| SINCE FILE | TOTAL |
|------------|-------|
|------------|-------|

| | | |
|---------------------|-------|---------|
| CA SUBSCRIBER PRICE | ENTRY | SESSION |
| | 0.00 | -4.00 |

FILE 'USPATFULL' ENTERED AT 18:23:39 ON 18 DEC 2008
CA INDEXING COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'USPATOLD' ENTERED AT 18:23:39 ON 18 DEC 2008
CA INDEXING COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'USPAT2' ENTERED AT 18:23:39 ON 18 DEC 2008
CA INDEXING COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'CAPLUS' ENTERED AT 18:23:39 ON 18 DEC 2008
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FILE 'JAPIO' ENTERED AT 18:23:39 ON 18 DEC 2008
COPYRIGHT (C) 2008 Japanese Patent Office (JPO)- JAPIO

=> s (isobuten? or isobutylen?)(4a)(polymer# or copolymer# or resin#)
L13 28137 (ISOBUTEN? OR ISOBUTYLEN?)(4A)(POLYMER# OR COPOLYMER# OR RESIN#)

=> s l13 and l4
L14 98 L13 AND L4

=> s l13 and l9
L15 8 L13 AND L9

=> s l14 and (surfactant# or surface(1a)active(1a)agent#)(s)(water or aqueous)
L16 47 L14 AND (SURFACTANT# OR SURFACE(1A) ACTIVE(1A) AGENT#)(S)(WATER OR AQUEOUS)

=> d l16 1-25 ibib abs

L16 ANSWER 1 OF 47 USPATFULL on STN
ACCESSION NUMBER: 2008:326227 USPATFULL
TITLE: Anionic Ethyl Methacrylate Copolymers and Use Thereof
INVENTOR(S): Kim, Son Nguyen, Hemsbach, GERMANY, FEDERAL REPUBLIC OF
Winter, Gabi, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF
Laubender, Matthias, Schifferstadt, GERMANY, FEDERAL REPUBLIC OF
PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|-----------------|------|-----------------------|
| PATENT INFORMATION: | US 20080286221 | A1 | 20081120 |
| APPLICATION INFO.: | US 2005-665881 | A1 | 20051019 (11) |
| | WO 2005-EP11239 | | 20051019 |
| | | | 20070419 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|--|------|
| PRIORITY INFORMATION: | DE 2004-10200405164820041022 | |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207, | |

WILMINGTON, DE, 19899, US
 NUMBER OF CLAIMS: 26
 EXEMPLARY CLAIM: 1-25
 LINE COUNT: 2658

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to copolymers which comprise ethyl methacrylate, at least one α,β -ethylenically unsaturated amide group-containing compound and at least one monoethylenically unsaturated carboxylic acid in copolymerized form, to cosmetic and pharmaceutical compositions which comprise at least one such copolymer, and to the use of these copolymers.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 2 OF 47 USPATFULL on SIN
 ACCESSION NUMBER: 2008:291292 USPATFULL
 TITLE: Process For Preparing Graft Polymers
 INVENTOR(S): Widmaier, Ralf, Mannheim, GERMANY, FEDERAL REPUBLIC OF
 Wegmann, Ludger, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF
 Mauri, Antonietta, Albersweiler, GERMANY, FEDERAL REPUBLIC OF
 Mathauer, Klemens, Taipei, TAIWAN, PROVINCE OF CHINA
 Jahnel, Wolfgang, Bellheim, GERMANY, FEDERAL REPUBLIC OF
 Taboada, Lidcay Herrera, Oostende, BELGIUM
 Neubecker, Karin, Frankenthal, GERMANY, FEDERAL REPUBLIC OF
 Khvorost, Alexander, Laudenbach, GERMANY, FEDERAL REPUBLIC OF
 PATENT ASSIGNEE(S): BASF SE, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|-----------------|------|-----------------------|
| PATENT INFORMATION: | US 20080255326 | A1 | 20081016 |
| APPLICATION INFO.: | US 2006-90961 | A1 | 20061025 (12) |
| | WO 2006-EP67745 | | 20061025 |
| | | | 20080421 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|--|------|
| PRIORITY INFORMATION: | DE 2005-10200505306420051104 | |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207, WILMINGTON, DE, 19899, US | |

NUMBER OF CLAIMS: 20
 EXEMPLARY CLAIM: 1
 LINE COUNT: 1080

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Processes for preparing graft polymers and their use for inhibiting gas hydrates

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 3 OF 47 USPATFULL on SIN
 ACCESSION NUMBER: 2008:284382 USPATFULL
 TITLE: Partially neutralized chlorosulfonated polyolefin elastomers

INVENTOR(S): Ennis, Royce Elton, Silsbee, TX, UNITED STATES
 Gadkari, Avinash C., Pearland, TX, UNITED STATES
 Glenn, Furman Eugene, Louisville, KY, UNITED STATES

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20080249243 | A1 | 20081009 |
| APPLICATION INFO.: | US 2008-75769 | A1 | 20080313 (12) |

| | NUMBER | DATE |
|-----------------------|--|---------------|
| PRIORITY INFORMATION: | US 2007-921582P | 20070403 (60) |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | DUPONT PERFORMANCE ELASTOMERS L.L.C., PATENT RECORDS CENTER, 4417 LANCASTER PIKE, BARLEY MILL PLAZA P25, WILMINGTON, DE, 19805, US | |

NUMBER OF CLAIMS: 8
 EXEMPLARY CLAIM: 1
 LINE COUNT: 490

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Partially neutralized chlorosulfonated polyolefin elastomers containing 0.5-10 weight percent chlorine and 0.25 to 5 weight percent sulfur are prepared from polyolefin elastomer base resins selected from the group consisting of propylene/ethylene copolymers, ethylene/propylene/diene copolymers, isobutylene/diene copolymers, isobutylene homopolymers, hydrogenated styrene/butadiene block copolymers and hydrogenated styrene/isoprene block copolymers.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 4 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 2008:252678 USPATFULL
 TITLE: Anionic, Ampholytic Copolymers for Low-Voc-Compositions
 INVENTOR(S): Kim, Son Nguyen, Hemsbach, GERMANY, FEDERAL REPUBLIC OF
 Laubender, Matthias, Schifferstadt, GERMANY, FEDERAL REPUBLIC OF
 Pierobon, Marianna, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF
 Winter, Gabi, Shanghai, CHINA
 PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|-----------------|------|-----------------------|
| PATENT INFORMATION: | US 20080219934 | A1 | 20080911 |
| APPLICATION INFO.: | US 2006-63962 | A1 | 20060804 (12) |
| | WO 2006-EP65071 | | 20060804 |
| | | | 20080215 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|--|----------|
| PRIORITY INFORMATION: | EP 2005-107651 | 20050819 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | CONNOLLY BOVE LODGE & HUTZ LLP, 1875 EYE STREET, N.W., SUITE 1100, WASHINGTON, DC, 20036, US | |
| NUMBER OF CLAIMS: | 20 | |
| EXEMPLARY CLAIM: | 1 | |

LINE COUNT: 2861

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides cosmetic compositions containing a copolymer obtainable by the copolymerization of at least one methacrylic acid ester, methacrylic acid, acrylic acid, optionally at least one compound containing amino groups and polymerizable by free radical polymerization, and optionally other olefinically unsaturated compounds polymerizable by free radical polymerization. The copolymerization can be carried out in the presence of silicones f) containing polyalkylene oxide.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 5 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2008:175028 USPATFULL

TITLE: Process for Producing Spherical Polymer Powder and Spherical Powder Comprising (Meth)Acrylic Block Copolymer

INVENTOR(S): Kyotani, Susumu, Hyogo, JAPAN
Furukawa, Naoki, Hyogo, JAPAN
Chiba, Takeshi, Osaka, JAPAN

PATENT ASSIGNEE(S): Kaneka Corporation, Osaka-shi, Osaka, JAPAN (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20080152909 | A1 | 20080626 |
| APPLICATION INFO.: | US 2006-884035 | A1 | 20060209 (11) |
| | WO 2006-JP2274 | | 20060209 |
| | | | 20071114 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|---|----------|
| PRIORITY INFORMATION: | JP 2005-35056 | 20050210 |
| | JP 2005-51164 | 20050225 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | BIRCH STEWART KOLASCH & BIRCH, PO BOX 747, FALLS CHURCH, VA, 22040-0747, US | |
| NUMBER OF CLAIMS: | 16 | |
| EXEMPLARY CLAIM: | 1 | |
| NUMBER OF DRAWINGS: | 4 Drawing Page(s) | |
| LINE COUNT: | 2555 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A process for spherical-polymer-powder production by which polymer particles which are nearly spherical, small in particle diameter, and suitable for use as a molding material can be easily obtained. The spherical polymer powder has excellent powder flowability, is safe, and can form, e.g., a high-quality molding, skin material, or coating film which is excellent in weather-ability, flexibility, rubber elasticity, low-temperature characteristics, adhesion to polar resins, texture, appearance, etc. The process for spherical-polymer-powder production is characterized by comprising a step in which an aqueous dispersion comprising a solvent solution of a polymer, water, and a dispersant is heated with stirring under such conditions that the power per unit volume of the dispersion, P/V, is 0.2 kW/m.sup.3 or more to remove the solvent from the aqueous dispersion.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 6 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 2008:103388 USPATFULL
 TITLE: Amphoteric Ethyl Methacrylate Copolymers and Use Thereof
 INVENTOR(S): Nguyen-Kim, Son, Hemsbach, GERMANY, FEDERAL REPUBLIC OF Winter, Gabi, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF Laubender, Matthias, Schifferstadt, GERMANY, FEDERAL REPUBLIC OF
 PATENT ASSIGNEE(S): BASF AKTIENGESELLSCHAFT, LUDWIGSHAFTEN GERMANY, GERMANY, FEDERAL REPUBLIC OF, D-67056 (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|-----------------|------|-----------------------|
| PATENT INFORMATION: | US 20080089853 | A1 | 20080417 |
| APPLICATION INFO.: | US 2005-665898 | A1 | 20051019 (11) |
| | WO 2005-EP11241 | | 20051019 |
| | | | 20070419 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|--|------|
| PRIORITY INFORMATION: | JP 2004-1020040515411720041022 | |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207, WILMINGTON, DE, 19899, US | |
| NUMBER OF CLAIMS: | 27 | |
| EXEMPLARY CLAIM: | 1-26 | |
| LINE COUNT: | 2705 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to amphoteric copolymers which comprise ethyl methacrylate, if appropriate a N-vinyl lactam compound, at least one monoethylenically unsaturated carboxylic acid and at least one compound with α,β -ethylenically unsaturated double bond and at least one cationogenic and/or cationic group in copolymerized form, to cosmetic and pharmaceutical compositions which comprise such copolymers, to preparation methods, and to the use of these copolymers.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 7 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 2008:98624 USPATFULL
 TITLE: Graft Copolymer, Method For Producing The Same And Resin Composition Containing The Graft Copolymer
 INVENTOR(S): Saegusa, Kazunori, Hyogo, JAPAN Tone, Hiroshi, Hyogo, JAPAN
 PATENT ASSIGNEE(S): Kaneka Corporation, Osaka, JAPAN, 530-8288 (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|-----------------|------|-----------------------|
| PATENT INFORMATION: | US 20080085975 | A1 | 20080410 |
| APPLICATION INFO.: | US 2005-793628 | A1 | 20051221 (11) |
| | WO 2005-JP23477 | | 20051221 |
| | | | 20070620 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|----------------|----------|
| PRIORITY INFORMATION: | JP 2004-380804 | 20041228 |

DOCUMENT TYPE: Utility
 FILE SEGMENT: APPLICATION
 LEGAL REPRESENTATIVE: SUGHRUE MION, PLLC, 2100 PENNSYLVANIA AVENUE, N.W.,
 SUITE 800, WASHINGTON, DC, 20037, US

NUMBER OF CLAIMS: 19
 EXEMPLARY CLAIM: 1
 LINE COUNT: 2269

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides a novel graft copolymer and a resin composition that is excellent in the balance between flame retardancy and impact strength. Specifically, the present invention provides a polyorganosiloxane-containing graft copolymer comprising a polyorganosiloxane (A) segment, a polymer (C) segment having at least a unit derived from a nitrogen-atom-containing multifunctional monomer (B) having two or more radically polymerizable groups in its molecule, and a polymer (E) segment derived from an ethylenically unsaturated monomer (D) that has a glass transition temperature of 40° C. or higher, and a resin composition containing the graft copolymer.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 8 OF 47 USPATFULL on SIN

ACCESSION NUMBER: 2008:86492 USPATFULL

TITLE: Aqueous Preparations Comprising at Least One
 Water-Soluble or Water-Dispersible Copolymer with
 Cationogenic Groups

INVENTOR(S): Pierobon, Marianna, Ludwigshafen, GERMANY, FEDERAL
 REPUBLIC OF
 Kim, Son Nguyen, Hemsbach, GERMANY, FEDERAL REPUBLIC OF
 Hossel, Peter, Schifferstadt, GERMANY, FEDERAL REPUBLIC
 OF

PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Ludwigshafen, GERMANY, FEDERAL
 REPUBLIC OF, D-67056 (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20080075689 | A1 | 20080327 |
| APPLICATION INFO.: | US 2005-629885 | A1 | 20050615 (11) |
| | WO 2005-EP6401 | | 20050615 |
| | | | 20061218 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|------------------------------|------|
| PRIORITY INFORMATION: | DE 2004-10200402977320040621 | |
| | DE 2005-10200500966820050228 | |
| | DE 2005-10200501010820050302 | |

DOCUMENT TYPE: Utility
 FILE SEGMENT: APPLICATION
 LEGAL REPRESENTATIVE: CONNOLLY BOVE LODGE & HUTZ LLP, 1875 EYE STREET, N.W.,
 SUITE 1100, WASHINGTON, DC, 20036, US

NUMBER OF CLAIMS: 25
 EXEMPLARY CLAIM: 1-24
 LINE COUNT: 2824

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to aqueous preparations comprising at least one water-soluble or water-dispersible copolymer with cationogenic groups which comprises at least one monomer with at least one protonatable nitrogen atom and at least one further monomer copolymerizable therewith in copolymerized form, and at least one cosmetically acceptable carrier, where the pH of the aqueous preparation

has a value in the range from pH 4 to pH 6.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 9 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2008:73733 USPATFULL
 TITLE: Microgels In Non-Crosslinkable Organic Media
 INVENTOR(S): Ziser, Torsten, Birkenau, GERMANY, FEDERAL REPUBLIC OF
 Fruh, Thomas, Mutterstadt, GERMANY, FEDERAL REPUBLIC OF
 Galda, Patrick, Karlsruhe, GERMANY, FEDERAL REPUBLIC OF
 Obrecht, Werner, Moers, GERMANY, FEDERAL REPUBLIC OF

| | NUMBER | KIND | DATE |
|---------------------|-----------------|------|-----------------------|
| PATENT INFORMATION: | US 20080064768 | A1 | 20080313 |
| APPLICATION INFO.: | US 2004-573374 | A1 | 20040923 (10) |
| | WO 2004-EP52290 | | 20040923 |
| | | | 20070808 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|---|----------|
| PRIORITY INFORMATION: | DE 2003-10344975 | 20030927 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | Jennifer R. Seng, Lanxess Corporation, Law & Intellectual Property Department, 111 RIDC Park West Drive, Pittsburgh, PA, 15275-1112, US | |
| NUMBER OF CLAIMS: | 39 | |
| EXEMPLARY CLAIM: | 1 | |
| NUMBER OF DRAWINGS: | 2 Drawing Page(s) | |
| LINE COUNT: | 1579 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention relates to a composition which comprises a specific non-crosslinkable medium and at least one microgel, processes for its preparation, uses of the compositions, and microgel-containing polymers, rubbers, lubricants, coatings etc. prepared therefrom

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 10 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2007:250681 USPATFULL
 TITLE: Copolymer, Graft Copolymer, Graft Copolymer Particles,
 Flame Retardant, and Resin Composition
 INVENTOR(S): Saegusa, Kazunori, Hyogo, JAPAN
 PATENT ASSIGNEE(S): KANEKA CORPORATION (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20070219319 | A1 | 20070920 |
| APPLICATION INFO.: | US 2005-579926 | A1 | 20050509 (11) |
| | WO 2005-JP8444 | | 20050509 |
| | | | 20061109 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|--|----------|
| PRIORITY INFORMATION: | JP 2004-142861 | 20040512 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | BRINKS HOFER GILSON & LIONE, P.O. BOX 10395, CHICAGO, IL, 60610, US | |

NUMBER OF CLAIMS: 12
 EXEMPLARY CLAIM: 1
 LINE COUNT: 1183
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A novel copolymer, graft copolymer, copolymer particles, flame retardant, and resin composition are provided. A copolymer including a polymer (A) segment having a glass transition temperature not more than -10° C., and a polymer (C) segment having at least a unit derived from a monomer (B) which has two or more of aromatic rings and one or more radical reactive groups in one molecule; a graft copolymer having the component (B) grafted onto the component (A); and copolymer particles thereof are obtained. A flame retardant resin composition is obtained by using the copolymer as a flame retardant and blending the flame retardant with the resin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 11 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 2007:198286 USPATFULL
 TITLE: Method for producing isobutylene resin powder
 INVENTOR(S): Yoshimi, Tomoyuki, Hyogo, JAPAN
 Ohara, Koichiro, Hyogo, JAPAN
 Furukawa, Naoki, Hyogo, JAPAN

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20070173635 | A1 | 20070726 |
| APPLICATION INFO.: | US 2005-587636 | A1 | 20050119 (10) |
| | WO 2005-JP563 | | 20050119 |
| | | | 20060728 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|---|----------|
| PRIORITY INFORMATION: | JP 2004-20997 | 20040129 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | BRINKS HOFER GILSON & LIONE, P.O. BOX 10395, CHICAGO, IL, 60610, US | |
| NUMBER OF CLAIMS: | 6 | |
| EXEMPLARY CLAIM: | 1 | |
| NUMBER OF DRAWINGS: | 1 Drawing Page(s) | |
| LINE COUNT: | 546 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB It is an object of the present invention to provide a resin powder composed of an isobutylene polymer having low contents of a remaining solvent and a remaining monomer in a product. The present invention is accomplished by a method of removing a solvent while suspending the isobutylene polymer solution in water with a surfactant to obtain resin slurry, and subjecting the resin slurry to steam stripping at a temperature ranging from 150° C. to less than 180° C. to produce a resin powder without deterioration in quality, the resin powder having significantly low contents of the remaining solvent and remaining styrene in the resin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 12 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 2007:183567 USPATFULL

TITLE: Personal care compositions containing cationically modified starch and an anionic surfactant system

INVENTOR(S): Staudigel, James Anthony, Loveland, OH, UNITED STATES
Peffly, Marjorie Mossman, Cincinnati, OH, UNITED STATES

| | NUMBER | KIND | DATE |
|-----------------------|--|------|---------------|
| PATENT INFORMATION: | US 20070160555 | A1 | 20070712 |
| APPLICATION INFO.: | US 2006-328302 | A1 | 20060109 (11) |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | APPLICATION | | |
| LEGAL REPRESENTATIVE: | THE PROCTER & GAMBLE COMPANY, INTELLECTUAL PROPERTY DIVISION - WEST BLDG., WINTON HILL BUSINESS CENTER - BOX 412, 6250 CENTER HILL AVENUE, CINCINNATI, OH, 45224, US | | |
| NUMBER OF CLAIMS: | 17 | | |
| EXEMPLARY CLAIM: | 1 | | |
| LINE COUNT: | 1372 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Personal care compositions comprise (a) from about 0.01 weight % to about 10 weight % of a water-soluble cationically modified starch polymer, wherein said water-soluble cationically modified starch polymer has a molecular weight from about 250,000 to about 15,000,000 and a charge density from about 0.2 meq/g to about 5 meq/g; (b) from about 5 weight % to about 50 weight % of an anionic surfactant system, said anionic surfactant system comprising at least one anionic surfactant and having an ethoxylate level and an anion level, (i) wherein said ethoxylate level is from about 1 to about 6, and (ii) wherein said anion level is from about 1 to about 6; and (c) a cosmetically acceptable medium. Personal care compositions as described above further comprise from about 0.01 weight % to about 10 weight % of one or more oily conditioning agents.

Methods of treating hair or skin comprise applying the personal care compositions as described above to the hair or skin and rinsing the hair or skin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 13 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2007:161460 USPATFULL

TITLE: Ampholytic anionic copolymers

INVENTOR(S): Nguyen-Kim, Son, Hemsbach, GERMANY, FEDERAL REPUBLIC OF
Mathauer, Klemens, Heidelberg, GERMANY, FEDERAL REPUBLIC OF
Wood, Claudia, Weinheim, GERMANY, FEDERAL REPUBLIC OF
Schuh, Gerd, Schwegenheim, GERMANY, FEDERAL REPUBLIC OF
Patwardhan, Darshan, Neuhausen, GERMANY, FEDERAL REPUBLIC OF

PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF, D-67056 (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|-----------------|------|-----------------------|
| PATENT INFORMATION: | US 20070141013 | A1 | 20070621 |
| APPLICATION INFO.: | US 2004-582227 | A1 | 20041208 (10) |
| | WO 2004-EP13983 | | 20041208 |
| | | | 20060609 PCT 371 date |

| | NUMBER | DATE |
|--|---|----------|
| PRIORITY INFORMATION: | DE 2003-10357487 | 20031209 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207, WILMINGTON, DE, 19899, US | |
| NUMBER OF CLAIMS: | 37 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 2307 | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |
| AB | Ampholytic copolymers which contain a molar excess of anionogenic and/or anionic groups, polyelectrolyte complexes which contain such an ampholytic copolymer, cosmetic and pharmaceutical compositions which contain at least one such copolymer or polyelectrolyte complex and the use of these copolymers and polyelectrolyte complexes are described. | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 14 OF 47 USPATFULL on STN

| | | |
|---------------------|--|-----------|
| ACCESSION NUMBER: | 2007:133980 | USPATFULL |
| TITLE: | Copolymers based on tertbutyl(meth) acrylate and use thereof | |
| INVENTOR(S): | Kim, Son Nguyen, Hemsbach, GERMANY, FEDERAL REPUBLIC OF Wood, Claudia, Weinheim, GERMANY, FEDERAL REPUBLIC OF | |
| PATENT ASSIGNEE(S): | BASF Aktiengesellschaft, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF, D-67056 (non-U.S. corporation) | |

| | NUMBER | KIND | DATE |
|---------------------|-----------------|------|-----------------------|
| PATENT INFORMATION: | US 20070116660 | A1 | 20070524 |
| APPLICATION INFO.: | US 2004-581884 | A1 | 20041208 (10) |
| | WO 2004-EP13984 | | 20041208 |
| | | | 20060606 PCT 371 date |

| | NUMBER | DATE |
|--|--|----------|
| PRIORITY INFORMATION: | DE 2003-10357486 | 20031209 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207, WILMINGTON, DE, 19899, US | |
| NUMBER OF CLAIMS: | 36 | |
| EXEMPLARY CLAIM: | 1-32 | |
| LINE COUNT: | 1975 | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |
| AB | Copolymers which contain tert-butyl (meth)acrylate, at least one α,β -ethylenically unsaturated amido-containing compound and acrylic acid incorporated in the form of polymerized units, cosmetic and pharmaceutical compositions which contain at least one such copolymer and the use of these copolymers are described. | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 15 OF 47 USPATFULL on STN

| | | |
|---------------------|--|-----------|
| ACCESSION NUMBER: | 2006:326898 | USPATFULL |
| TITLE: | Optical element and optical pickup apparatus | |
| INVENTOR(S): | Murakami, Shuji, Tokyo, JAPAN | |
| PATENT ASSIGNEE(S): | KONICA MINOLTA OPTO, INC. (non-U.S. corporation) | |

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20060280099 | A1 | 20061214 |
| APPLICATION INFO.: | US 2006-438341 | A1 | 20060523 (11) |

| | NUMBER | DATE |
|-----------------------|--|----------|
| PRIORITY INFORMATION: | JP 2005-152306 | 20050525 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP, 901 NEW YORK AVENUE, NW, WASHINGTON, DC, 20001-4413, US | |
| NUMBER OF CLAIMS: | 16 | |
| EXEMPLARY CLAIM: | 1 | |
| NUMBER OF DRAWINGS: | 5 Drawing Page(s) | |
| LINE COUNT: | 1427 | |
| AB | An object of the invention is to suppress adherence of dust or stain due to the environment and provide an optical element that can maintain optical characteristic for a long period of time, and achieve high durability and reliability. It is also another object of the invention to provide an optical pickup apparatus with good pickup characteristic, using the optical element. Disclosed is an optical element, including: plastic compound, wherein charging characteristic of the optical element is not less than +2 kV and not more than +15 kV, and transmission of the optical element for a light flux having a wavelength of 405 nm is not less than 85%. | |

L16 ANSWER 16 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2006:321652 USPATFULL

TITLE: Use of crosslinked microgels for modifying the temperature-dependent behavior of non-crosslinkable organic media

INVENTOR(S): Fessenbecker, Achim, Waghausel, GERMANY, FEDERAL REPUBLIC OF
Galda, Patrick, Karlsruhe, GERMANY, FEDERAL REPUBLIC OF
Ziser, Torsten, Birkenau, GERMANY, FEDERAL REPUBLIC OF
Fruh, Thomas, Limburgerhof, GERMANY, FEDERAL REPUBLIC OF
OF
Obrecht, Werner, Moers, GERMANY, FEDERAL REPUBLIC OF

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20060275690 | A1 | 20061207 |
| APPLICATION INFO.: | US 2006-374247 | A1 | 20060313 (11) |

| | NUMBER | DATE |
|--|--|------|
| PRIORITY INFORMATION: | DE 2005-10200501427020050324 | |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | LANKESS CORPORATION, 111 RIDC PARK WEST DRIVE, PITTSBURGH, PA, 15275-1112, US | |
| NUMBER OF CLAIMS: | 31 | |
| EXEMPLARY CLAIM: | 1 | |
| NUMBER OF DRAWINGS: | 1 Drawing Page(s) | |
| LINE COUNT: | 1110 | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |
| AB | The invention relates to the use of microgels for modifying the temperature behavior of non-crosslinkable organic media, in particular | |

in high temperature applications at least about 100° C., for example in engine oils, gear oils, etc.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 17 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2006:295688 USPATFULL

TITLE: Compositions that contain microgels and thickening agents

INVENTOR(S): Obrecht, Werner, Moers, GERMANY, FEDERAL REPUBLIC OF
Ziser, Torsten, Birkenau, GERMANY, FEDERAL REPUBLIC OF
Fruh, Thomas, Limburgerhof, GERMANY, FEDERAL REPUBLIC OF
OF
Galda, Patrick, Karlsruhe, GERMANY, FEDERAL REPUBLIC OF
Fessenbecker, Achim, Waghausel, GERMANY, FEDERAL
REPUBLIC OF

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20060252858 | A1 | 20061109 |
| APPLICATION INFO.: | US 2006-374364 | A1 | 20060313 (11) |

| | NUMBER | DATE |
|-----------------------|--|------|
| PRIORITY INFORMATION: | DE 2005-10200501427220050324 | |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | LANXESS CORPORATION, 111 RIDC PARK WEST DRIVE, PITTSBURGH, PA, 15275-1112, US | |
| NUMBER OF CLAIMS: | 43 | |
| EXEMPLARY CLAIM: | 1 | |
| NUMBER OF DRAWINGS: | 1 Drawing Page(s) | |
| LINE COUNT: | 1146 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides a composition that contains at least one specific non-crosslinkable organic medium at least one microgel and at least one thickening agent, a process for the preparation thereof and uses of the compositions.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 18 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2006:221188 USPATFULL

TITLE: Cosmetic and pharmaceutical substances based on polyelectrolyte complexes

INVENTOR(S): Nguyen-Kim, Son, Hemsbach, GERMANY, FEDERAL REPUBLIC OF
Muller, Gabi, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF
OF
Wood, Claudia, Weinheim, GERMANY, FEDERAL REPUBLIC OF
Hossel, Peter, Schifferstadt, GERMANY, FEDERAL REPUBLIC OF

PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Ludwigshafen, GERMANY, FEDERAL
REPUBLIC OF, D-67056 (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20060188468 | A1 | 20060824 |
| APPLICATION INFO.: | US 2004-564627 | A1 | 20040713 (10) |
| | WO 2004-EP7742 | | 20040713 |
| | | | 20060113 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|---|----------|
| PRIORITY INFORMATION: | DE 2003-10331870 | 20030714 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207, WILMINGTON, DE, 19899, US | |
| NUMBER OF CLAIMS: | 22 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 2186 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to cosmetic and pharmaceutical compositions which comprise at least one polyelectrolyte complex which comprises a copolymer with cationogenic groups based on vinylimidazole and an acid-group-containing polymer. The invention further relates to the use of these polyelectrolyte complexes.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 19 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 2006:194884 USPATFULL
 TITLE: Use of cross-linked cationic polymers in cosmetics
 INVENTOR(S): Gauweiler, Werner, Lustadt, GERMANY, FEDERAL REPUBLIC
 OF
 Wegmann, Ludger, Ludwigshafen, GERMANY, FEDERAL
 REPUBLIC OF
 Leduc, Marc, Speyer, GERMANY, FEDERAL REPUBLIC OF
 Chrisstoffels, Lysander, Limburgerhof, GERMANY, FEDERAL
 REPUBLIC OF
 Gotsche, Michael, Mannheim, GERMANY, FEDERAL REPUBLIC
 OF
 PATENT ASSIGNEE(S): Wood, Claudia, Weinheim, GERMANY, FEDERAL REPUBLIC OF
 Basf Aktiengesellschaft, Ludwigshafen, GERMANY, FEDERAL
 REPUBLIC OF, 67056 (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20060165639 | A1 | 20060727 |
| APPLICATION INFO.: | US 2003-525232 | A1 | 20030829 (10) |
| | WO 2003-EP9596 | | 20030829 |
| | | | 20050222 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|---|----------|
| PRIORITY INFORMATION: | DE 2002-10241296 | 20020904 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C., 1940 DUKE STREET, ALEXANDRIA, VA, 22314, US | |
| NUMBER OF CLAIMS: | 7 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 1718 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention relates to the use of a cationic crosslinked polymer which is preparable by free-radical polymerization in the presence of salts and of protective colloids in cosmetics.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 20 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2006:3426 USPATFULL

TITLE: Personal care compositions containing cationically modified starch and an anionic surfactant system

INVENTOR(S): Peffly, Marjorie Mossman, Cincinnati, OH, UNITED STATES
Fliego, Salvador, Mason, OH, UNITED STATES
Staudigel, James Anthony, Cincinnati, OH, UNITED STATES
Gizaw, Yonas, Cincinnati, OH, UNITED STATES

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20060002880 | A1 | 20060105 |
| APPLICATION INFO.: | US 2005-169827 | A1 | 20050629 (11) |

| | NUMBER | DATE |
|-----------------------|--|---------------|
| PRIORITY INFORMATION: | US 2004-585152P | 20040702 (60) |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | THE PROCTER & GAMBLE COMPANY, INTELLECTUAL PROPERTY DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL AVENUE, CINCINNATI, OH, 45224, US | |
| NUMBER OF CLAIMS: | 20 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 1427 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Personal care compositions comprise (a) from about 0.01 weight % to about 10 weight % of a water-soluble cationically modified starch polymer, wherein said water-soluble cationically modified starch polymer has a molecular weight from about 1,000 to about 200,000 and a charge density from about 0.7 meq/g to about 7 meq/g; (b) from about 5 weight % to about 50 weight % of an anionic surfactant system, said anionic surfactant system comprising at least one anionic surfactant and having an ethoxylate level and an anion level, (i) wherein said ethoxylate level is from about 1 to about 6, and (ii) wherein said anion level is from about 1 to about 6; and (c) a cosmetically acceptable medium. Personal care compositions as described above further comprise from about 0.01 weight % to about 10 weight % of one or more oily conditioning agents. Methods of treating hair or skin comprise applying the personal care compositions as described above to the hair or skin and rinsing the hair or skin.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 21 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2005:305313 USPATFULL

TITLE: Cross-linked cationic copolymers comprising regulators, and use thereof in cosmetic preparations for hair

INVENTOR(S): Chrisstoffels, Lysander, Limburgerhof, GERMANY, FEDERAL REPUBLIC OF
Angel, Maximilian, Schifferstadt, GERMANY, FEDERAL REPUBLIC OF
Hossel, Peter, Schifferstadt, GERMANY, FEDERAL REPUBLIC OF
Mathauer, Klemens, Heidelberg, GERMANY, FEDERAL REPUBLIC OF
Wood, Claudia, Weinheim, GERMANY, FEDERAL REPUBLIC OF
Faul, Dieter, Niederkirchen, GERMANY, FEDERAL REPUBLIC

PATENT ASSIGNEE(S): OF
 BASF AKTIENGESSELLSCHAFT, Ludwigshafen, GERMANY, FEDERAL
 REPUBLIC OF, D-67056 (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20050265950 | A1 | 20051201 |
| APPLICATION INFO.: | US 2003-524370 | A1 | 20030724 (10) |
| | WO 2003-EP8097 | | 20030724 |
| | | | 20050210 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|--|----------|
| PRIORITY INFORMATION: | DE 2002-10237378 | 20020812 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | CONNOLLY BOVE LODGE & HUTZ LLP, SUITE 800, 1990 M STREET NW, WASHINGTON, DC, 20036-3425, US | |

NUMBER OF CLAIMS: 22
 EXEMPLARY CLAIM: 1
 LINE COUNT: 1749
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention relates to the use of polymers in cosmetic preparations for hair. Said polymers can be obtained by (i) radically initiated copolymerisation of monomer mixtures consisting of (a) at least one cationic monomer or quaternisable monomer (b), optionally a water-soluble monomer, (c) optionally another radically copolymerisable monomer, (d) at least one monomer acting as a cross-linking agent and having at least two ethylenically unsaturated, non-conjugated double bonds, and (e) at least one regulator; and by (ii) subsequent quaternisation or protonation of the polymers, provided that a non-quaternised or only partially quaternised monomer is used as monomer (a).

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 22 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 2005:209673 USPATFULL
 TITLE: Microgels in crosslinkable organic media
 INVENTOR(S): Ziser, Torsten, Birkenau, GERMANY, FEDERAL REPUBLIC OF
 Heiliger, Ludger, Neustadt, GERMANY, FEDERAL REPUBLIC OF
 Fruh, Thomas, Limburgerhof, GERMANY, FEDERAL REPUBLIC OF
 Obrecht, Werner, Moers, GERMANY, FEDERAL REPUBLIC OF

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 20050182158 | A1 | 20050818 |
| APPLICATION INFO.: | US 2004-947875 | A1 | 20040923 (10) |

| | NUMBER | DATE |
|-----------------------|--|----------|
| PRIORITY INFORMATION: | DE 2003-10344976 | 20030927 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | LANXESS CORPORATION, 111 RIDC PARK WEST DRIVE, PITTSBURGH, PA, 15275-1112, US | |
| NUMBER OF CLAIMS: | 24 | |
| EXEMPLARY CLAIM: | 1 | |

NUMBER OF DRAWINGS: 10 Drawing Page(s)
 LINE COUNT: 1146
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.
 AB The present invention relates to a composition which contain a specific organic, crosslinkable medium and at least one microgel which is not crosslinked by high-energy radiation, processes for its preparation, uses of the compositions, microgel-containing polymers prepared therefrom and shaped articles or coatings produced therefrom.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 23 OF 47 USPTAFULL on STN
 ACCESSION NUMBER: 2004:89059 USPTAFULL
 TITLE: Flexible emissive coatings for elastomer substrates
 INVENTOR(S): Halladay, James R., Harborcreek, PA, UNITED STATES
 Krakowski, Frank J., Erie, PA, UNITED STATES
 Caster, Kenneth C., Cary, NC, UNITED STATES
 Troughton, Ernest Barritt, JR., Raleigh, NC, UNITED STATES

| | NUMBER | KIND | DATE |
|-----------------------|--|------|---------------|
| PATENT INFORMATION: | US 20040068036 | A1 | 20040408 |
| | US 6777026 | B2 | 20040817 |
| APPLICATION INFO.: | US 2002-265576 | A1 | 20021007 (10) |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | APPLICATION | | |
| LEGAL REPRESENTATIVE: | Miles B. Dearth, 111 Lord Drive, P.O. Box 8012, Cary, NC, 27512-8012 | | |
| NUMBER OF CLAIMS: | 24 | | |
| EXEMPLARY CLAIM: | 1 | | |
| NUMBER OF DRAWINGS: | 6 Drawing Page(s) | | |
| LINE COUNT: | 3618 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Emissive coatings for flexible substrates, preferably elastomers or elastomers bonded to metal are disclosed. The coating composition is formed by combining parts (a) and (b) where part (a) comprises an organic solution or aqueous dispersion of a functional group containing polymer or copolymer and thermal conductive filler; and part (b) comprises a liquid curing component, for example a poly isocyanate, a carbodiimide, or an amino resin. The coating compounds can be applied to an substrate either before or after the substrate has been vulcanized. The coatings can be cured at ambient temperatures and provide heat dissipation over long term service at elevated temperatures.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 24 OF 47 USPTAFULL on STN
 ACCESSION NUMBER: 2002:202201 USPTAFULL
 TITLE: Hydrogenated polymers, resin composition, and process for producing substrate for information-recording medium
 INVENTOR(S): Suzuki, Teruhiko, Kawasaki, JAPAN
 Nagamune, Tsutomu, Kawasaki, JAPAN
 Kohara, Teiji, Kawasaki, JAPAN
 Murakami, Toshihide, Kawasaki, JAPAN
 Takahashi, Haruhiko, Kawasaki, JAPAN
 PATENT ASSIGNEE(S): Nippon Zeon Co., Ltd., Tokyo, JAPAN (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 6433102 | B1 | 20020813 |
| | WO 2000034340 | | 20000615 |
| APPLICATION INFO.: | US 2001-856156 | | 20010904 (9) |
| | WO 1999-JP6813 | | 19991206 |
| | | | 20010902 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|--|----------|
| PRIORITY INFORMATION: | JP 1998-346167 | 19981204 |
| | JP 1999-19963 | 19990128 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | GRANTED | |
| PRIMARY EXAMINER: | Lipman, Bernard | |
| LEGAL REPRESENTATIVE: | Armstrong, Westerman & Hattori, LLP | |
| NUMBER OF CLAIMS: | 14 | |
| EXEMPLARY CLAIM: | 1 | |
| NUMBER OF DRAWINGS: | 0 Drawing Figure(s); 0 Drawing Page(s) | |
| LINE COUNT: | 2862 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A hydrogenated product of an aromatic vinyl polymer, wherein the hydrogenation rate of the aromatic rings thereof is at least 97%, a ratio (Mw/Mn) of the weight average molecular weight (Mw) to the number average molecular weight (Mn) is at most 2.0, the weight average molecular weight (Mw) is 100,000 to 300,000, and the content of a component having a molecular weight (M) of at most 10,000 is at most 2% by weight based on the total weight of the polymer; a hydrogenated product of an aromatic vinyl polymer, wherein the content of foreign matter having a particle diameter of at least 0.5 μm in the hydrogenated polymer is at most 3.0×10^4 particles/g; and a substrate for information recording media obtained by molding a resin material containing a hydrogenated product of an aromatic vinyl polymer, wherein the hydrogenation rate of the aromatic rings thereof is at least 97%, a ratio (Mw/Mn) of the weight average molecular weight (Mw) to the number average molecular weight (Mn) is at most 2.0, and the weight average molecular weight (Mw) is 100,000 to 300,000, and production process thereof.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 25 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 1998:75690 USPATFULL
 TITLE: Polymers of alkyl-1-vinylimidazoles, the preparation and use thereof
 INVENTOR(S): Schade, Christian, Ludwigshafen, Germany, Federal Republic of
 Jager, Hans-Ulrich, Neustadt, Germany, Federal Republic of
 Detering, Jurgen, Limburgerhof, Germany, Federal Republic of
 PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Ludwigshafen, Germany, Federal Republic of (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|--------------|
| PATENT INFORMATION: | US 5773545 | | 19980630 |
| | WO 9515345 | | 19950608 |
| APPLICATION INFO.: | US 1996-646262 | | 19960520 (8) |
| | WO 1994-EP3868 | | 19941123 |

19960520 PCT 371 date
 19960520 PCT 102(e) date

| | NUMBER | DATE |
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| | ----- | ----- |
| PRIORITY INFORMATION: | DE 1993-4341072 | 19931202 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | Granted | |
| PRIMARY EXAMINER: | Seidleck, James J. | |
| ASSISTANT EXAMINER: | Cheng, Wu C. | |
| LEGAL REPRESENTATIVE: | Obion, Spivak, McClelland, Maier & Neustadt, P.C. | |
| NUMBER OF CLAIMS: | 10 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 723 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Polymers of alkyl-1-vinylimidazoles, a process for preparing polymers of alkyl-1-vinylimidazoles by free-radical polymerization of a monomer mixture comprising

(a) 10-100% by weight of at least one alkyl-1-vinylimidazole and

(b) 0-90% by weight of 1-vinylpyrrolidone, 1-vinylcaprolactam, 1-vinyltriazole, 1-vinylimidazole, 1-vinylloxazolidinone or mixtures thereof,

(c) 0-30% by weight of other monoethylenically unsaturated monomers and

(d) 0-10% by weight of a monomer containing at least 2 monoethylenic double bonds

in water, at least one C.sub.1 -C.sub.4 -alcohol or mixtures thereof, and the use of polymers which comprise at least 10% by weight of an alkyl-1-vinylimidazole as copolymerized unit as additive to detergents to inhibit transfer of dyes during the washing process.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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L16 ANSWER 1 OF 47 USPATFULL on \$IN

ACCESSION NUMBER: 2008:326227 USPATFULL

TITLE: Anionic Ethyl Methacrylate Copolymers and Use Thereof

INVENTOR(S): Kim, Son Nguyen, Hemsbach, GERMANY, FEDERAL REPUBLIC OF
 Winter, Gabi, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF
 Laubender, Matthias, Schifferstadt, GERMANY, FEDERAL REPUBLIC OF

PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|-----------------|-------|-----------------------|
| | ----- | ----- | ----- |
| PATENT INFORMATION: | US 20080286221 | A1 | 20081120 |
| APPLICATION INFO.: | US 2005-665881 | A1 | 20051019 (11) |
| | WO 2005-EP11239 | | 20051019 |
| | | | 20070419 PCT 371 date |

| NUMBER | DATE |
|--------|-------|
| ----- | ----- |

PRIORITY INFORMATION: DE 2004-10200405164820041022
DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207,
WILMINGTON, DE, 19899, US
NUMBER OF CLAIMS: 26
EXEMPLARY CLAIM: 1-25
LINE COUNT: 2658
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM To achieve the purest possible polymers with a low residual monomer content, the polymerization (main polymerization) can be followed by an after-polymerization step. The after-polymerization can take place in the presence of the same initiator system as the main polymerization or a different initiator system. Preferably, the after-polymerization is carried out at the same temperature as the main polymerization, preferably at a higher temperature. If desired, the reaction mixture can be subjected to stripping with steam or to steam distillation following the polymerization or between the first and the second polymerization steps.

SUMM Preferably, the cosmetic compositions according to the invention comprise at least one copolymer as defined above (=component A), at least one carrier B) as defined above and at least one constituent different therefrom which is chosen from cosmetically active ingredients, emulsifiers, surfactants, preservatives, perfume oils, thickeners, hair polymers, hair and skin conditioners, graft polymers, water-soluble or dispersible silicone-containing polymers, photoprotective agents, bleaches, gel formers, care agents, colorants, tinting agents, tanning agents, dyes, pigments, bodying agents, humectants, regreasing agents, collagen, protein hydrolyzates, lipids, antioxidants, antifoams, antistats, emollients and softeners.

SUMM In addition, the group of suitable anionic polymers includes, for example, Balance® CR (National Starch; acrylate copolymer), Balance® 0/55 (National Starch; acrylate copolymer), Balance® 47 (National Starch; octylacrylamide/acrylate/butylaminoethyl methacrylate copolymer), Aquaflex® FX 64 (ISP; isobutylene /ethylmaleimide/hydroxyethylmaleimide copolymer), Aquaflex® SF-40 (ISP/National Starch; VP/vinyl caprolactam/DMAPA acrylate copolymer), Alliant® LT-120 (ISP; Rohm & Haas; acrylate/C.sub.1-2 succinate/hydroxyacrylate copolymer), Aquarez® HS (Eastman; polyester-1), Diaformer® Z-400 (Clariant; methacryloylethylbetaine/methacrylate copolymer), Diaformer® Z-711 (Clariant; methacryloylethyl N-oxide/methacrylate copolymer), Diaformer® Z-7,2-(Clariant; methacryloylethyl N-oxide/methacrylate copolymer), Omnirez® 2000 (ISP; monoethyl ester of poly(methyl vinyl ether/maleic acid in ethanol), Amphomer® HC (National Starch; acrylate/octylacrylamide copolymer), Amphomer® 28-4910 (National Starch; octylacrylamide/acrylate/butylaminoethyl methacrylate copolymer), Advantage® HC 37 (ISP; terpolymer of vinylcaprolactam/vinylpyrrolidone/dimethylaminoethyl methacrylate), Advantage® LC55 and LC80 or LC A and LC E, Advantage® Plus (ISP; VA/butyl maleate/isobornyl acrylate copolymer), Aculyne® 258 (Rohm & Haas; acrylate/hydroxyl ester acrylate copolymer), Luviset® P.U.R. (BASF, polyurethane-1), Luviflex® Silk (BASF), Eastman® AQ 48 (Eastman), Styleze® CC-10 (ISP; VP/DMAPA acrylates copolymer), Styleze® 2000 (ISP; VP/acrylates/lauryl methacrylate copolymer), Dynam® (National Starch; polyurethane-14 AMP-acrylates copolymer), Resyn® XP (National Starch; acrylates/octylacrylamide copolymer), Fixomer® A-30 (Ondeo Nalco; polymethacrylic acid (and

acrylamidomethylpropanesulfonic acid), Fixate® G-100 (Noveon; AMP-acrylates/alllyl methacrylate copolymer).

- SUMM Such formulations comprise at least one copolymer according to the invention and usually anionic surfactants as base surfactants and amphoteric and/or nonionic surfactants as cosurfactants. Further suitable active ingredients and/or auxiliaries are generally chosen from lipids, perfume oils, dyes, organic acids, preservatives and antioxidants, and thickeners/gel formers, skin conditioners and humectants.
- SUMM These formulations preferably comprise 2 to 50% by weight, preferably 5 to 40% by weight, particularly preferably 8 to 30% by weight of surfactants, based on the total weight of the formulation.
- SUMM In the washing, showering and bathing preparations, all of the anionic, neutral, amphoteric or cationic surfactants customary in body-cleansing compositions can be used.
- SUMM Suitable anionic surfactants are, for example, alkyl sulfates, alkyl ether sulfates, alkylsulfonates, alkylarylsulfonates, alkyl succinates, alkyl sulfosuccinates, N-alkoyl sarcosinates, acyl taurates, acyl isothionates, alkyl phosphates, alkyl ether phosphates, alkyl ether carboxylates, alpha-olefin sulfonates, in particular the alkali metal and alkaline earth metal salts, e.g. sodium, potassium, magnesium, calcium, and ammonium and triethanolamine salts. The alkyl ether sulfates, alkyl ether phosphates and alkyl ether carboxylates can have between 1 to 10 ethylene oxide or propylene oxide units, preferably 1 to 3 ethylene oxide units, in the molecule.
- SUMM Suitable amphoteric surfactants are, for example, alkylbetaines, alkylamidopropylbetaines, alkylsulfobetaines, alkyl glycinate, alkyl carboxyglycinates, alkyl amphotacetates or propionates, alkyl amphodiacetates or dipropionates.
- SUMM Suitable nonionic surfactants are, for example, the reaction products of aliphatic alcohols or alkylphenols having 6 to 20 carbon atoms in the alkyl chain, which may be linear or branched, with ethylene oxide and/or propylene oxide. The amount of alkylene oxide is about 6 to 60 mols per mole of alcohol. Also suitable are alkylamine oxides, mono- or dialkylalkanolamides, fatty acid esters of polyethylene glycols, ethoxylated fatty acid amides, alkyl polyglycosides or sorbitan ether esters.
- SUMM In addition, the washing, showering and bathing preparations can comprise customary cationic surfactants, such as, for example quaternary ammonium compounds, for example cetyltrimethylammonium chloride.
- SUMM The hair-treatment compositions according to the invention are preferably in the form of a setting foam, hair mousse, hair gel, shampoo, hairspray, hair foam, end fluids, neutralizers for permanent waves, hair colorants and bleaches or "hot-oil treatments". Depending on the field of application, the hair cosmetic preparations can be applied in the form of an (aerosol) spray, (aerosol) foam, gel, gel spray, cream, lotion or wax. Hairsprays here comprise both aerosol sprays and also pump sprays without propellant gas. Hair foams comprise both aerosol foams and also pump foams without propellant gas. Hairsprays and hair foams preferably comprise predominantly or exclusively water-soluble or water-dispersible components. If the

compounds used in the hairsprays and hair foams according to the invention are water-dispersible, they can be applied in the form of aqueous microdispersions with particle diameters of from usually 1 to 350 nm, preferably 1 to 250 nm. The solids contents of these preparations are here usually in a range from about 0.5 to 20% by weight. These microdispersions generally require no emulsifiers or surfactants for their stabilization.

SUMM Further constituents are understood as meaning the additives customary in cosmetics, for example propellants, antifoams, interface-active compounds, i.e. surfactants, emulsifiers, foam formers and solubilizers. The interface-active compounds used may be anionic, cationic, amphoteric or neutral. Further customary constituents may also be, for example, preservatives, perfume oils, opacifiers, active ingredients, UV filters, care substances, such as panthenol, collagen, vitamins, protein hydrolyzates, alpha- and beta-hydroxycarboxylic acids, protein hydrolyzates, stabilizers, pH regulators, dyes, viscosity regulators, gel formers, dyes, salts, humectants, regreasing agents, complexing agents and further customary additives.

SUMM The copolymers according to the invention, as defined above, can preferably be used in shampoo formulations as setting and/or conditioning agents. Preferred shampoo formulations comprise

- 0.05 to 10% by weight of at least one copolymer according to the invention,
- 25 to 94.95% by weight of water,
- 5 to 50% by weight of surfactants,
- 0 to 5% by weight of a further conditioner,
- 0 to 10% by weight of further cosmetic constituents.

SUMM In the shampoo formulations, all of the anionic, neutral, amphoteric or cationic surfactants used customarily in shampoos can be used.

SUMM Suitable anionic surfactants are, for example, alkyl sulfates, alkyl ether sulfates, alkylsulfonates, alkylarylsulfonates, alkyl succinates, alkyl sulfo succinates, N-alkoyl sarcosinates, acyl taurates, acyl isothionates, alkyl phosphates, alkyl ether phosphates, alkyl ether carboxylates, alpha-olefinsulfonates, in particular the alkali metal and alkaline earth metal salts, e.g. sodium, potassium, magnesium, calcium, and ammonium and triethanolamine salts. The alkyl ether sulfates, alkyl ether phosphates and alkyl ether carboxylates can have between 1 and 10 ethylene oxide or propylene oxide units, preferably 1 and 3 ethylene oxide units, in the molecule.

SUMM Suitable amphoteric surfactants are, for example, alkylbetaines, alkylamidopropyl-betaines, alkylsulfobetaines, alkyl glycinates, alkyl carboxyglycinates, alkyl amphoacetates or amphopropionates, alkylamphodiacetates or amphodipropionates.

SUMM Suitable nonionic surfactants are, for example, the reaction products of aliphatic alcohols or alkylphenols having 6 to 20 carbon atoms in the alkyl chain, which may be linear or branched, with ethylene oxide and/or propylene oxide. The amount of alkylene oxide is about 6 to 60 mols per mole of alcohol. In addition, alkylamine oxides, mono- or dialkylalkanolamides, fatty acid esters of polyethylene glycols, alkyl polyglycosides or sorbitan ether esters are suitable.

SUMM Furthermore, the shampoo formulations can comprise customary cationic surfactants, such as, for example, quaternary ammonium compounds, for example cetyltrimethylammonium chloride.

CLM What is claimed is:

44. The composition of claim 42, additionally comprising at least one additive different from A) and B) and which is selected from the group consisting of cosmetically active ingredients, emulsifiers, surfactants, preservatives, perfume oils, thickeners, hair polymers, hair and skin conditioners, graft polymers, water-soluble or dispersible silicone-containing polymers, photoprotective agents, bleaches, gel formers, care agents, colorants, tinting agents, tanning agents, dyes, pigments, bodying agents, humectants, regreasing agents, collagen, protein hydrolyzates, lipids, antioxidants, antifoams, antistats, emollients, and softeners.

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L16 ANSWER 5 OF 47 USPATFULL on STN

ACCESSION NUMBER: 2008:175028 USPATFULL

TITLE: Process for Producing Spherical Polymer Powder and Spherical Powder Comprising (Meth)Acrylic Block Copolymer

INVENTOR(S): Kyotani, Susumu, Hyogo, JAPAN

Furukawa, Naoki, Hyogo, JAPAN

Chiba, Takeshi, Osaka, JAPAN

PATENT ASSIGNEE(S): Kaneka Corporation, Osaka-shi, Osaka, JAPAN (non-U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|-----------------------|
| PATENT INFORMATION: | US 20080152909 | A1 | 20080626 |
| APPLICATION INFO.: | US 2006-884035 | A1 | 20060209 (11) |
| | WO 2006-JP2274 | | 20060209 |
| | | | 20071114 PCT 371 date |

| | NUMBER | DATE |
|-----------------------|---|----------|
| PRIORITY INFORMATION: | JP 2005-35056 | 20050210 |
| | JP 2005-51164 | 20050225 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | APPLICATION | |
| LEGAL REPRESENTATIVE: | BIRCH STEWART KOLASCH & BIRCH, PO BOX 747, FALLS CHURCH, VA, 22040-0747, US | |

NUMBER OF CLAIMS: 16
 EXEMPLARY CLAIM: 1
 NUMBER OF DRAWINGS: 4 Drawing Page(s)
 LINE COUNT: 2555

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM The above-mentioned heating is preferably carried out by blowing steam into the aqueous dispersion and the solvent is preferably removed from the aqueous dispersion in the manner of steam stripping.

SUMM The polymer is preferably a thermoplastic resin. More preferably, the thermoplastic resin is selected from among (meth)acrylic polymers, (meth)acrylic copolymers and isobutylene-based polymers.

DETD The raw material polymer to be used in the process for producing spherical polymer powders according to the invention is not particularly restricted but may be any of those soluble in a solvent and undergoing

no hardening by heating; thus, various thermoplastic resins can be used. As the thermoplastic resins, there may be mentioned, among others, olefinic polymers such as polyethylene, polypropylene, polybutene, polymethylpentene and norbornene-based resins, polystyrene, styrene-maleic anhydride copolymers and like vinyl polymers, (meth)acrylic polymers and copolymers such as acrylic polymers, methacrylic polymers, acrylic polymers, methacrylic polymers, acrylic copolymers, methacrylic copolymers and (meth)acrylate-styrene copolymers, acrylonitrile-styrene copolymer resins (AS resins), polycarbonates, polyarylates, polyvinyl chloride, polyvinylidene chloride, polyvinyl alcohol, modified polyphenylene ethers, polyamides, polyamideimides, polyacetals, polyesters, isobutylene-based polymers, styrene-(ethylene-propylene)-styrene copolymers (SEPS), styrene-(ethylene-butylene)-styrene copolymers (SEBS), styrene-isoprene-styrene copolymers (SIS) and like styrene copolymers and, further, acrylic rubbers, silicone rubbers, isoprene rubbers (IR), ethylene-propylene rubbers (EPR, EPDM) and like uncured rubbers. Among the thermoplastic resins mentioned above, olefinic resins, vinyl polymers, (meth)acrylic polymers or (meth)acrylic copolymers, AS resins, polycarbonates, polyvinyl chloride, polyvinylidene chloride, polyvinyl alcohol, modified polyphenylene ethers, isobutylene-based polymers, styrene copolymers and uncured rubbers are preferred in view of their good thermal stability, moldability, impact resistance and other physical properties, and (meth)acrylic polymers (meth)acrylic copolymers and isobutylene-based polymers are particularly preferred in view of their good physical properties after molding. In the present specification, "(meth)acrylic" means acrylic and/or methacrylic.

- DETD The above-mentioned isobutylene-based polymer that can be preferably used in the practice of the invention is not particularly restricted but may be any of those polymers derived mainly from isobutylene. Preferred are block copolymers composed of a polymer block derived mainly from isobutylene and a polymer block derived mainly from an aromatic vinyl monomer. More specifically, polymers obtained by cationic polymerization of isobutylene and an aromatic vinyl monomer or a like monomer using an initiator in the presence of a Lewis acid catalyst can suitably be used.
- DETD The polymer block derived mainly from isobutylene is generally a polymer block having an isobutylene unit content of not lower than 60% by weight, preferably not lower than 80% by weight. The polymer block derived mainly from an aromatic vinyl monomer is generally a polymer block having an aromatic vinyl monomer unit content of not lower than 60% by weight, preferably not lower than 80% by weight.
- DETD The primary and/or secondary monohalogenated hydrocarbon containing 3 to 8 carbon atoms is not particularly restricted but includes methyl chloride, methylene chloride, 1-chlorobutane, chlorobenzene and the like. Among them, 1-chlorobutane is suited for use in view of the balance among the solubility of isobutylene-based block copolymers, the ease of rendering it nonhazardous by decomposition, the cost thereof, etc.
- DETD In producing such an isobutylene-based block copolymer, an electron donor component may further be allowed to coexist in the system according to need. As such compound, there may be mentioned, for example, pyridines, amines, amides, sulfoxides, esters, or metal atom-bound oxygen atom-containing metal compounds.
- DETD The molecular weight of the isobutylene-based block copolymer is not particularly restricted, either, but, from the flowability, processability and physical properties viewpoint, among

others, it is preferably 30,000 to 500,000, particularly preferably 50,000 to 400,000, as expressed in terms of number average molecular weight.

- DETD The dispersant to be used in the process of the invention is not particularly restricted but includes water-soluble cellulosic resins such as methylcellulose, hydroxyethylcellulose, hydroxypropylmethylcellulose and carboxymethylcellulose, polyvinyl alcohols, polyethylene glycol, polyvinylpyrrolidone, polyacrylamide, polystyrenesulfonic acid salts and like organic substances, inorganic solids such as calcium phosphate and calcium carbonate, and nonionic surfactants such as glycerol fatty acid esters, sorbitan esters, propylene glycol fatty acid esters, sucrose fatty acid esters, citric acid mono (or di or tri) stearin esters, pentaerythritol fatty acid esters, trimethylolpropane fatty acid esters, polyglycerol fatty acid esters, polyoxyethyleneglycerol fatty acid esters, polyesters, polyoxyethylenesorbitan fatty acid esters, polyethylene glycol fatty acid esters, polypropylene glycol fatty acid esters, polyoxyethylene glycol fatty alcohol ethers, polyoxyethylene alkylphenyl ethers, N,N-bis(2-hydroxyethylene) fatty amines, ethylenebisstearamide, fatty acid-diethanol condensation products, polyoxyethylene-polyoxypropylene block polymers, polyethylene glycol and polypropylene glycol. Appropriate ones are selected from among these according to the polymer to be used. Among those, at least one species selected from the group consisting of methylcellulose, polyvinyl alcohol, calcium phosphate, calcium carbonate and nonionic surfactants is preferably used from the good dispersibility viewpoint. Such dispersants may be used singly or two or more of them may be used in combination. In the case of combined use of two or more species, the combination is not particularly restricted but mixtures of two or more selected from among methylcellulose, polyvinyl alcohol, calcium phosphate, calcium carbonate and nonionic surfactants are preferably used.
- DETD The additive amount of the dispersant is properly selected considering the ability to disperse the polymer and the properties of the solvent. For example, when a (meth)acrylic polymer or an isobutylene-based polymer is used, the dispersant is added preferably in an amount of 0.01 to 5 parts by weight, more preferably 0.05 to 3 parts by weight, particularly preferably 0.1 to 2 parts by weight, per 100 parts by weight of the polymer. At amounts below 0.01 part by weight, sufficient dispersion of the polymer will not be attained and, in some cases, it becomes difficult to obtain the desired particles and, at amounts exceeding 5 parts by weight, the excessive addition will not result in any particular further change in dispersion characteristics, hence is economically unfavorable and, in addition, such physical characteristics as the transparency of the polymer and moldability may possibly be adversely affected.
- DETD The single use of a polyvinyl alcohol or methylcellulose as the dispersant is favorable since it makes it easy to obtain the desired spherical polymer powder. It is also possible to use calcium carbonate or calcium phosphate in combination. When a nonionic surfactant is used, it is possible to use the same singly but the combined use of calcium carbonate and/or calcium phosphate is preferred since the granulation becomes easier. In this case, the amount of the nonionic surfactant is not larger than 50 parts by weight, more preferably 3 to 30 parts by weight, particularly preferably 5 to 20 parts by weight, per part by weight of calcium carbonate and/or calcium phosphate.
- DETD In the process of the invention, the aqueous dispersion is preferably heated by blowing steam into the same to remove the solvent from the aqueous dispersion in the manner of steam stripping.
- DETD The time required for steam stripping is selected so

that it may be sufficient to distill off the solvent almost completely. Since stirring influences the state of dispersion and the degree of formation and morphology of polymer particles, the steam stripping is carried out in a condition such that the solution is thoroughly stirred.

- DETD The vessel to be used in stripping is only required that it be provided with a pipe for introducing steam as inserted into the liquid phase and, like in suspension or solvent removal operations, the method comprising introducing steam into a stirrer is adequately used. The steam stripping operation may be carried out, simultaneously with stirring the aqueous dispersion of the polymer solution with heating, by passing steam into the same vessel, or may be carried out successively by providing a separate stripping vessel. Further, it is also possible to carry out the stripping continuously by connecting one or more aeration/stirring vessels or contacting steam with the resin in slurry form in a tray column. From the viewpoint of high solvent removal efficiency, the steam stripping is preferably carried out simultaneously in the same vessel as used for stirring the aqueous dispersion of the polymer solution with heating.
- DETD The temperature of the aqueous dispersion on the occasion of steam stripping is preferably equal to or higher than the azeotropic temperature of the solvent and water, like the liquid heating temperature mentioned above. Specifically, the temperature is preferably not lower than 70° C. but lower than 160° C., more preferably not lower than 80° C. but lower than 150° C., although it may vary depending on the solvent employed. In cases where the steam stripping is carried out at 100° C. or above, it can be performed by pressurizing the vessel inside through decreasing the flow in the evaporated fraction outlet line.
- DETD The solvent evaporated by heating and/or steam stripping is then sent to a cooling tower or the like for cooling and thus can be recovered. If necessary, the solvent may be separated from the aqueous phase and then purified or otherwise treated for recycling to the polymerization step.
- DETD When the reactive functional group (Y) is an acid anhydride group, the acid anhydride group-containing compound (B) is not particularly restricted but may be any of those compounds containing, on an average, 1,1 or more acid anhydride groups per molecule. Thus, it includes, but is not limited to, 3,3',4,4'-biphenyltetracarboxylic acid dianhydride, 3,3',4,4'-benzophenonetetracarboxylic acid dianhydride, pyromellitic acid dianhydride, 3,3',4,4'-diphenyl sulfone-tetracarboxylic acid dianhydride, maleinated methylcyclohexene-tetrabasic acid anhydride, isobutylene-maleic anhydride copolymers, and such polymers as BONDINE (product name, product of Sumitomo-Atofina) and like acid anhydride group-containing polymers, among others. These acid anhydride group-containing compounds may be used singly or two or more of them may be used in combination.
- DETD Styrene-isobutylene-styrene (SIBS) Block Copolymer Synthesis
- DETD The same 3-liter pressure stirring device as used in Example 1 was charged with 450 ml of pure water and 600 ml of polymer solution (solid matter concentration 25%) obtained in Production Example 1, 1.5 g (75 g as 2% aqueous solution) of a polyvinyl alcohol type surfactant (product name: Gohsenol GH-23 (R), product of Nippon Synthetic Chemical Industry) was added, and the temperature was raised by blowing steam into the stirring vessel from the lower part thereof with stirring at 800 rpm. On that occasion, the P/V ratio was 2.40 kW/m.sup.3. The solvent gas resulting from evaporation with the increase in temperature was introduced into a condenser for successive

solvent recovery and, 5 minutes after arrival at 100° C., the steam feeding was stopped. The stirring vessel was cooled by passing water through the jacket and, after lowering of the liquid temperature to 60° C., the stirring was stopped. The resin slurry formed in the stirring vessel was then recovered. The residual solvent content in the spherical powder as recovered was 15,000 ppm. The polymer powder recovered was dried in the same manner as in Example 1 to give dried particles. In the spherical powder obtained, particles having a particle diameter of 0.05 to 0.3 mm amounted to 90% by weight of the whole spherical powder and the average particle diameter of the spherical powder was 190 μ m. Further, particles with an aspect ratio within the range of 1 to 2 amounted to 95% of the total number of particles. The dried powder particles obtained were weighed, and a silica powder (product name: Microcrystalline Soft Silica A-10, product of Tatsumori LTD., average particle diameter 2.6 μ m) was added, as a filler, to the powder particles at ordinary temperature (about 25° C.) in an amount such that the silica powder weight amounted to 6 parts relative to the weight of the dried powder particles, and the resulting mixture was evaluated for powder characteristics (Table 1).

DET D The same 3-liter pressure stirring device as used in Production Example 1 was charged with 600 ml of pure water and 600 ml of the polymer solution obtained in Production Example 2 (solid matter concentration 15%), 1.5 g of water-soluble cellulose ether (product name: 90SH-100 (R), product of Shin-Etsu Chemical Co.) with a cloud point of 90° C. was added and the stirring device was then tightly closed. The contents were stirred at 12,000 rpm while the temperature was raised by means of a jacket. The P/V ratio on that occasion was 7.10 kW/m.sup.3 on average. After arrival of the stirring vessel inside temperature at 90° C., the solvent gas was introduced into a condenser for successive solvent recovery. The inside pressure was adjusted while taking care to avoid foaming and, after arrival of the inside pressure at the saturated water vapor pressure at the stirring vessel inside temperature, the heating and solvent evaporation were terminated and, after lowering of the inside temperature to room temperature, the stirring was also terminated, and the resin slurry formed within the stirring vessel was recovered. The residual solvent in the spherical polymer powder contained in the recovered resin slurry amounted to 43,000 ppm. The resin slurry recovered was again returned to the stirring vessel and, after tight closure, subjected to steam stripping. The steam stripping was carried out by blowing steam into the stirring vessel from the lower part thereof while the temperature was maintained at 100 to 110° C. for 10 minutes. The temperature was again lowered, and the resin slurry was recovered and measured for the residual solvent content in the resin; the solvent had been removed to a residual solvent content of about 5,700 ppm. This resin slurry was dehydrated by centrifugation and dried in an atmosphere of 150° C. in a box type drier for 5 hours. The residual solvent content in the thus-obtained spherical polymer powder was 90 ppm. In the dried spherical powder, particles having a particle diameter of 0.05 to 0.3 mm amounted to 90% by weight of the whole spherical polymer powder and the average particle diameter of the spherical powder was 180 μ m. Further, particles with an aspect ratio within the range of 1 to 2 amounted to 90% of the total number of particles.

DET D A resin slurry was recovered by solvent evaporation carried out in the same manner as in Example 3 except that a 3-liter pressure stirring device was charged with 600 ml of pure water and 600 ml of the polymer solution obtained in Production Example 2 (solid matter concentration 15%), 1.08 g of polyethylene glycol monostearate with a cloud point of 100° C. or higher and 0.11 g of ethylenebisstearamide were added,

and steam stripping was carried out at a temperature of 140° C. The residual solvent content in the resin obtained by centrifugation was measured to be about 200 ppm. In the spherical powder obtained after drying, the residual solvent content was 20 ppm, particles having a particle diameter of 1.0 to 2.0 mm amounted to 90% by weight of the whole spherical polymer powder and the average particle diameter of the spherical powder was 1,500 μ m. Further, particles with an aspect ratio within the range of 1 to 2 amounted to 92% of the total number of particles.

DETD A 3-liter pressure stirring device was charged with 600 ml of pure water and 300 ml of the polymer solution obtained in Production Example 1 (solid matter concentration 25%), 3.75 g (125 g as 3% aqueous solution) of a polyvinyl alcohol type surfactant (product name: Gohsenol KH-17, product of Nippon Synthetic Chemical Industry) was added and the stirring device was then tightly closed. The contents were stirred at 900 rpm using a two-stage four-inclined paddle impeller while the temperature was raised by means of a jacket. The P/V ratio on that occasion was 2.60 kW/m.sup.3. After arrival of the stirring vessel inside temperature at 90° C., the solvent gas was introduced into a condenser for successive solvent recovery. The inside pressure was adjusted while taking care to avoid foaming and, after arrival of the inside pressure at the saturated water vapor pressure at the stirring vessel inside temperature, the heating and solvent evaporation were terminated and, after lowering of the inside temperature to room temperature, the stirring was also terminated, and the resin slurry formed within the stirring vessel was recovered. The resin slurry recovered was suction filtered using a Kiriya funnel and No. 2 filter paper, and the thus-recovered solid matter was dried for a whole day and night under vacuum to give dried particles. In the spherical powder obtained, particles having a particle diameter of 0.05 to 0.5 mm amounted to 95% by weight of the whole spherical powder and the average particle diameter of the spherical powder was 220 μ m. Further, particles with an aspect ratio within the range of 1 to 2 amounted to 98% of the total number of particles. The dried powder particles obtained were weighed, and a silica powder (product name: Microcrystalline Soft Silica A-10, product of Tatsumori LTD., average particle diameter 2.6 μ m) was added, as a filler, to the powder particles at ordinary temperature (about 25° C.) in an amount such that the silica powder weight amounted to 2 parts relative to the weight of the dried powder particles, and the resulting mixture was evaluated for powder characteristics (Table 1).

DETD The same 3-liter pressure stirring device as used in Example 1 was charged with 600 ml of pure water and 300 ml of polymer solution (solid matter concentration 25%) obtained in Production Example 1, 3.75 g (125 g as 3% aqueous solution) of a polyvinyl alcohol type surfactant (product name: Gohsenol KH-20, product of Nippon Synthetic Chemical Industry) was added, and the temperature was raised by blowing steam into the stirring vessel from the lower part thereof with stirring at 800 rpm. On that occasion, the P/V ratio was 2.65 kW/m.sup.3. The solvent gas resulting from evaporation with the increase in temperature was introduced into a condenser for successive solvent recovery and, 5 minutes after arrival at 100° C., the steam feeding was stopped. The stirring vessel was cooled by passing water through the jacket and, after lowering of the liquid temperature to 60° C., the stirring was stopped. The resin slurry formed in the stirring vessel was then recovered. The residual solvent content in the spherical powder as recovered was 11,000 ppm. The polymer powder recovered was dried in the same manner as in Example A to give dried particles. In the spherical powder obtained, particles having a particle diameter of 0.05 to 0.5 mm amounted to 95% by weight of the

whole spherical powder and the average particle diameter of the spherical powder was 230 μm . Further, particles with an aspect ratio within the range of 1 to 2 amounted to 95% of the total number of particles. The dried powder particles obtained were weighed, and an additive (product name: MA1002, product of Nippon Shokubai Co., average particle diameter 2 μm) was added to the powder particles at ordinary temperature (about 25° C.) in an amount such that the powder weight amounted to 2 parts relative to the weight of the dried powder particles, and the resulting mixture was evaluated for powder characteristics (Table 1).

CLM What is claimed is:

3. The process according to claim 1 or 2 wherein the heating is carried out by blowing steam into the aqueous dispersion and the solvent is removed from the aqueous dispersion in the manner of steam stripping.

CLM What is claimed is:

5. The process according to claim 1 wherein at least one dispersant selected from the group consisting of methylcellulose, polyvinyl alcohol, calcium phosphate, calcium carbonate and nonionic surfactants is used as the dispersant.

CLM What is claimed is:

8. The process according to claim 7 wherein the thermoplastic resin is selected from among (meth)acrylic polymers, (meth)acrylic copolymers and isobutylene-based polymers.

=> FILE STNGUIDE

| | | |
|--|------------|---------|
| COST IN U.S. DOLLARS | SINCE FILE | TOTAL |
| | ENTRY | SESSION |
| FULL ESTIMATED COST | 95.94 | 269.25 |
| DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) | SINCE FILE | TOTAL |
| | ENTRY | SESSION |
| CA SUBSCRIBER PRICE | 0.00 | -4.00 |

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|--|------------|---------|
| COST IN U.S. DOLLARS | SINCE FILE | TOTAL |
| | ENTRY | SESSION |
| FULL ESTIMATED COST | 0.06 | 269.31 |
| DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) | SINCE FILE | TOTAL |
| | ENTRY | SESSION |
| CA SUBSCRIBER PRICE | 0.00 | -4.00 |

FILE 'USPATFULL' ENTERED AT 18:31:07 ON 18 DEC 2008
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FILE 'USPAT2' ENTERED AT 18:31:07 ON 18 DEC 2008
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=> d 116 26-47 ibib abs

L16 ANSWER 26 OF 47 USPATFULL on STN

ACCESSION NUMBER: 93:31252 USPATFULL
TITLE: Composition comprising polymer encapsulant for sealing layer encapsulated substrate
INVENTOR(S): McDougall, Lee A., Houston, TX, United States
Newlove, John C., Kingwood, TX, United States
Manalastas, Pacifico V., Edison, NJ, United States
Drake, Evelyn N., Bernardsville, NJ, United States
PATENT ASSIGNEE(S): Exxon Research and Engineering Company, Florham Park, NJ, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|---|------|--------------|
| PATENT INFORMATION: | US 5204183 | | 19930420 |
| APPLICATION INFO.: | US 1992-816915 | | 19920103 (7) |
| DISCLAIMER DATE: | 20100216 | | |
| RELATED APPLN. INFO.: | Division of Ser. No. US 1991-637391, filed on 4 Jan 1991, now patented, Pat. No. US 5102559 And a continuation-in-part of Ser. No. US 1989-446572, filed on 4 Dec 1989, now abandoned And a continuation-in-part of Ser. No. US 1989-446573, filed on 4 Dec 1989, now abandoned And a continuation-in-part of Ser. No. US 1989-446736, filed on 6 Dec 1989, now abandoned | | |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Lovering, Richard D. | | |
| ASSISTANT EXAMINER: | Sayala, C. | | |
| LEGAL REPRESENTATIVE: | Simon, Jay | | |
| NUMBER OF CLAIMS: | 7 | | |
| EXEMPLARY CLAIM: | 1 | | |
| NUMBER OF DRAWINGS: | 1 Drawing Figure(s); 1 Drawing Page(s) | | |
| LINE COUNT: | 779 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB An encapsulated breaker chemical composition used in a fracturing process in an oil or gas stimulation operation which comprises: (a) a breaker chemical; (b) a water soluble sealing layer, such as urea, having a thickness within the range of about 1 to about 30 microns deposited on the surface of said breaker chemical and encapsulating said breaker chemical; and (c) a pinhole free coating of a neutralized sulfonated elastomeric polymer of about 2 to about 80 microns thick deposited onto the surface of the coated breaker chemical, wherein said neutralized sulfonated polymer encapsulates the breaker chemical and is permeable to the breaker chemical.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 27 OF 47 USPATFULL on STN

ACCESSION NUMBER: 93:18522 USPATFULL
 TITLE: Composition comprising encapsulated substrate and thermoplastic polymer overcoating
 INVENTOR(S): McDougall, Lee A., Houston, TX, United States
 Newlove, John C., Kingwood, TX, United States
 Manalastas, Pacifico V., Edison, NJ, United States
 Drake, Evelyn N., Bernardsville, NJ, United States
 PATENT ASSIGNEE(S): Exxon Research & Engineering Company, Florham Park, NJ, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|--|--|------|--------------|
| PATENT INFORMATION: | US 5192615 | | 19930309 |
| APPLICATION INFO.: | US 1992-816912 | | 19920103 (7) |
| DISCLAIMER DATE: | 20090407 | | |
| RELATED APPLN. INFO.: | Division of Ser. No. US 1991-637401, filed on 4 Jan 1991, now patented, Pat. No. US 5102558 which is a continuation-in-part of Ser. No. US 1989-446572, filed on 4 Dec 1989, now abandoned which is a continuation-in-part of Ser. No. US 1989-446831, filed on 6 Dec 1989, now abandoned which is a continuation-in-part of Ser. No. US 1989-446958, filed on 6 Dec 1989, now abandoned | | |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Stoll, Robert L. | | |
| ASSISTANT EXAMINER: | Sayala, C. | | |
| LEGAL REPRESENTATIVE: | Simon, Jay | | |
| NUMBER OF CLAIMS: | 6 | | |
| EXEMPLARY CLAIM: | 1 | | |
| NUMBER OF DRAWINGS: | 1 Drawing Figure(s); 1 Drawing Page(s) | | |
| LINE COUNT: | 813 | | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | | |

AB An encapsulated breaker chemical composition used in a fracturing process in the protection of an oil or gas stimulation operation which comprises: a breaker chemical; and a pinhole free coating of a neutralized sulfonated elastomeric polymer of about 2 to about 80 microns thick deposited onto the surface of the breaker chemical, wherein said neutralized sulfonated polymer encapsulates the breaker chemical, wherein the neutralized sulfonated polymer is permeable to the breaker chemical and the neutralized sulfonated polymer is non-reactive to the breaker chemical.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 28 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 93:12371 USPATFULL
 TITLE: Composition comprising encapsulated substrate with thermoplastic polymer overcoating
 INVENTOR(S): Manalastas, Pacifico V., Edison, NJ, United States
 Drake, Evelyn N., Bernardsville, NJ, United States
 Kresge, Edward N., Watchung, NJ, United States
 Thaler, Warren A., Flemington, NJ, United States
 McDougall, Lee A., Houston, TX, United States
 Newlove, John C., Kingwood, TX, United States
 Swarup, Vijay, Clinton, NJ, United States
 Geiger, Albert J., Ft. Saskatchewan, Canada
 PATENT ASSIGNEE(S): Exxon Research and Engineering Company, Florham Park, NJ, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|---|------|--------------|
| PATENT INFORMATION: | US 5187011 | | 19930216 |
| APPLICATION INFO.: | US 1992-819304 | | 19920109 (7) |
| RELATED APPLN. INFO.: | Division of Ser. No. US 1991-676662, filed on 28 Mar 1991, now patented, Pat. No. US 5110486 which is a continuation-in-part of Ser. No. US 1991-637391, filed on 4 Jan 1991, now patented, Pat. No. US 5102559 And Ser. No. US 1991-637401, filed on 4 Jan 1991, now patented, Pat. No. US 5102558, said Ser. No. 637391 And Ser. No. 637401, each which is a continuation-in-part of Ser. No. US 1989-446572, filed on 4 Dec 1989, now abandoned Ser. No. Ser. No. US 1989-446573, filed on 4 Dec 1989, now abandoned Ser. No. Ser. No. US 1989-446736, filed on 6 Dec 1989, now abandoned Ser. No. Ser. No. US 1989-446831, filed on 6 Dec 1989, now abandoned And Ser. No. US 1989-446958, filed on 6 Dec 1989, now abandoned | | |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Stoll, Robert L. | | |
| ASSISTANT EXAMINER: | Sayala, C. | | |
| LEGAL REPRESENTATIVE: | Simon, Jay | | |
| NUMBER OF CLAIMS: | 6 | | |
| EXEMPLARY CLAIM: | 1 | | |
| NUMBER OF DRAWINGS: | 2 Drawing Figure(s); 2 Drawing Page(s) | | |
| LINE COUNT: | 1074 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB An encapsulated breaker chemical composition used in an oil or gas stimulation operation which comprises: a breaker chemical; and a pinhole free coating of an ionically and covalently crosslinked neutralized sulfonated elastomeric polymer of about 2 to about 80 microns thick deposited onto the surface of the breaker chemical, wherein said polymer encapsulates the breaker chemical, wherein the polymer is permeable to the breaker chemical and the polymer is non-reactive to the breaker chemical.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 29 OF 47 USPATFULL ON STN

ACCESSION NUMBER: 92:35871 USPATFULL

TITLE: Breaker chemical encapsulated with a crosslinked elastomer coating

INVENTOR(S): Manalastas, Pacifico V., Edison, NJ, United States
 Drake, Evelyn N., Bernardsville, NJ, United States
 Kresge, Edward N., Watchung, NJ, United States
 Thaler, Warren A., Flemington, NJ, United States
 McDougall, Lee A., Houston, TX, United States
 Newlove, John C., Kingwood, TX, United States
 Swarup, Vijay, Clinton, NJ, United States
 Geiger, Albert J., Fort Saskatchewan, Canada

PATENT ASSIGNEE(S): Exxon Research and Engineering Company, Florham Park, NJ, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|--|------|--------------|
| PATENT INFORMATION: | US 5110486 | | 19920505 |
| APPLICATION INFO.: | US 1991-676662 | | 19910328 (7) |
| DISCLAIMER DATE: | 20090407 | | |
| RELATED APPLN. INFO.: | Continuation-in-part of Ser. No. US 1991-637391, filed | | |

on 4 Jan 1991 And a continuation-in-part of Ser. No. US 1991-637401, filed on 4 Jan 1991 , each which is a continuation-in-part of Ser. No. US 1989-446572, filed on 4 Dec 1989, now abandoned Ser. No. Ser. No. US 1989-446573, filed on 4 Dec 1989, now abandoned Ser. No. Ser. No. US 1989-446736, filed on 6 Dec 1989, now abandoned Ser. No. Ser. No. US 1989-446831, filed on 6 Dec 1989, now abandoned And Ser. No. US 1989-446958, filed on 6 Dec 1989, now abandoned

DOCUMENT TYPE: Utility
 FILE SEGMENT: Granted
 PRIMARY EXAMINER: Stoll, Robert L.
 ASSISTANT EXAMINER: Sayala, Chhaya
 LEGAL REPRESENTATIVE: Simon, Jay
 NUMBER OF CLAIMS: 24
 EXEMPLARY CLAIM: 1
 NUMBER OF DRAWINGS: 2 Drawing Figure(s); 2 Drawing Page(s)
 LINE COUNT: 1127
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB An encapsulated breaker chemical composition used in an oil or gas stimulation operation which comprises: a breaker chemical; and a pinhole free coating of an ionically and covalently crosslinked neutralized sulfonated elastomeric polymer of about 2 to about 80 microns thick deposited onto the surface of the breaker chemical, wherein said polymer encapsulates the breaker chemical, wherein the polymer is permeable to the breaker chemical and the polymer is non-reactive to the breaker chemical.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 30 OF 47 USPATFULL ON STN

ACCESSION NUMBER: 92:27207 USPATFULL
 TITLE: Encapsulated breaker chemical with a multi-coat layer urea
 INVENTOR(S): McDougall, Lee A., Houston, TX, United States
 Newlove, John C., Kingwood, TX, United States
 Manalastas, Pacifico V., Edison, NJ, United States
 Drake, Evelyn N., Bernardsville, NJ, United States
 PATENT ASSIGNEE(S): Exxon Research and Engineering Company, Florham Park, NJ, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|---|------|--------------|
| PATENT INFORMATION: | US 5102559 | | 19920407 |
| APPLICATION INFO.: | US 1991-637391 | | 19910104 (7) |
| DISCLAIMER DATE: | 20090407 | | |
| RELATED APPLN. INFO.: | Continuation-in-part of Ser. No. US 1989-446572, filed on 4 Dec 1989, now abandoned And a continuation-in-part of Ser. No. US 1989-446573, filed on 4 Dec 1989, now abandoned And a continuation-in-part of Ser. No. US 1989-446736, filed on 6 Dec 1989, now abandoned | | |

DOCUMENT TYPE: Utility
 FILE SEGMENT: Granted
 PRIMARY EXAMINER: Stoll, Robert L.
 ASSISTANT EXAMINER: Sayala, Chhaya
 LEGAL REPRESENTATIVE: Simon, Jay
 NUMBER OF CLAIMS: 23
 EXEMPLARY CLAIM: 1
 NUMBER OF DRAWINGS: 1 Drawing Figure(s); 1 Drawing Page(s)
 LINE COUNT: 843

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB An encapsulated breaker chemical composition used in a fracturing process in an oil or gas stimulation operation which comprises: (a) a breaker chemical; (b) a water soluble sealing layer, such as urea, having a thickness within the range of about 1 to about 30 microns deposited on the surface of said breaker chemical and encapsulating said breaker chemical; and (c) a pinhole free coating of a neutralized sulfonated elastomeric polymer of about 2 to about 80 microns thick deposited onto the surface of the coated breaker chemical, wherein said neutralized sulfonated polymer encapsulates the breaker chemical and is permeable to the breaker chemical.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 31 OF 47 USPATFULL ON STN

ACCESSION NUMBER: 92:27206 USPATFULL

TITLE: Encapsulated breaker chemical

INVENTOR(S): McDougall, Lee A., Houston, TX, United States

Newlove, John C., Kingwood, TX, United States

Manalastas, Pacifico V., Edison, NJ, United States

Drake, Evelyn N., Bernardsville, NJ, United States

PATENT ASSIGNEE(S): Exxon Research and Engineering Company, Florham Park, NJ, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|--|------|--------------|
| PATENT INFORMATION: | US 5102558 | | 19920407 |
| APPLICATION INFO.: | US 1991-637401 | | 19910104 (7) |
| RELATED APPLN. INFO.: | Continuation-in-part of Ser. No. US 1989-446572, filed on 14 Dec 1989, now abandoned And a continuation-in-part of Ser. No. US 1989-446831, filed on 6 Dec 1989, now abandoned And a continuation-in-part of Ser. No. US 1989-446958, filed on 6 Dec 1989, now abandoned | | |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Stoll, Robert L. | | |
| ASSISTANT EXAMINER: | Sayala, Chhaya | | |
| LEGAL REPRESENTATIVE: | Simon, Jay | | |
| NUMBER OF CLAIMS: | 21 | | |
| EXEMPLARY CLAIM: | 1 | | |
| NUMBER OF DRAWINGS: | 1 Drawing Figure(s); 1 Drawing Page(s) | | |
| LINE COUNT: | 868 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB An encapsulated breaker chemical composition used in a fracturing process in the protection of an oil or gas stimulation operation which comprises: a breaker chemical; and a pinhole free coating of a neutralized sulfonated elastomeric polymer of about 2 to about 80 microns thick deposited onto the surface of the breaker chemical, wherein said neutralized sulfonated polymer encapsulates the breaker chemical, wherein the neutralized sulfonated polymer is permeable to the breaker chemical and the neutralized sulfonated polymer is non-reactive to the breaker chemical.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 32 OF 47 USPATFULL ON STN

ACCESSION NUMBER: 91:106396 USPATFULL

TITLE: Halogenation of polymers with improved neutralization

INVENTOR(S): Newman, Neil F., Edison, NJ, United States

PATENT ASSIGNEE(S): Gardner, Irwin J., Scotch Plains, NJ, United States
Exxon Chemical Patents Inc., Linden, NJ, United States
(U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|-----------------|------|--------------|
| PATENT INFORMATION: | US 5077345 | | 19911231 |
| APPLICATION INFO.: | US 1990-486773 | | 19900301 (7) |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Lipman, Bernard | | |
| LEGAL REPRESENTATIVE: | Gibbons, M. L. | | |
| NUMBER OF CLAIMS: | 17 | | |
| EXEMPLARY CLAIM: | 1 | | |
| LINE COUNT: | 648 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A halogenation process is provided for halogenating a polymer, in which process the halogenation reaction product is neutralized by reaction of an aqueous alkaline material in the presence of a critical limited amount of alcohol to increase the neutralization rate.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 33 OF 47 USPATFULL ON STN

ACCESSION NUMBER: 84:31773 USPATFULL

TITLE: Process for nonaqueous dispersion polymerization of butadiene in the presence of polymeric dispersing agents

INVENTOR(S): Throckmorton, Morford C., Akron, OH, United States

PATENT ASSIGNEE(S): The Goodyear Tire & Rubber Company, Akron, OH, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|--------------------|------|--------------|
| PATENT INFORMATION: | US 4452960 | | 19840605 |
| APPLICATION INFO.: | US 1982-420065 | | 19820920 (6) |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Michl, Paul R. | | |
| LEGAL REPRESENTATIVE: | Rockhill, Alvin T. | | |
| NUMBER OF CLAIMS: | 16 | | |
| EXEMPLARY CLAIM: | 1 | | |
| LINE COUNT: | 1236 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention discloses a process for the nonaqueous dispersion polymerization of butadiene monomer in a reaction mixture containing a liquid nonaqueous dispersion medium, the improvement which comprises carrying out the polymerization of the butadiene monomer in the presence of at least one member selected from the group consisting of cis-1,4-poly(1,3-pentadiene), trans-1,4-poly(1,3-pentadiene), trans-1,2-poly(1,3-pentadiene), moderately high trans-1,4-polyisoprene, poly(2,3-dimethyl-1,3-butadiene), syndiotactic 1,2-polybutadiene, atactic 1,2-polybutadiene, butadiene/isoprene copolymers, butadiene/dimethylbutadiene/pentadiene terpolymers, styrene/1,3-pentadiene copolymers, mixtures of from 20% to 65% 3,4-polyisoprene and from 35% to 80% 1,4-polyisoprene, EPDM rubbers, and butyl rubbers to produce very high cis-1,4-polybutadiene.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 34 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 84:912 USPATFULL
 TITLE: Process for nonaqueous dispersion polymerization of butadiene
 INVENTOR(S): Throckmorton, Morford C., Akron, OH, United States
 Suchma, Charles J., North Royalton, OH, United States
 PATENT ASSIGNEE(S): The Goodyear Tire & Rubber Company, Akron, OH, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|--------------------|------|--------------|
| PATENT INFORMATION: | US 4424324 | | 19840103 |
| APPLICATION INFO.: | US 1982-448120 | | 19821209 (6) |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Michl, Paul R. | | |
| LEGAL REPRESENTATIVE: | Rockhill, Alvin T. | | |
| NUMBER OF CLAIMS: | 18 | | |
| EXEMPLARY CLAIM: | 1 | | |
| LINE COUNT: | 874 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention discloses a process for the nonaqueous dispersion polymerization of butadiene monomer in a reaction mixture containing a liquid nonaqueous dispersion medium, a catalyst system, butadiene monomer, and at least one polymeric dispersing agent, the improvement which comprises carrying out the polymerization of the butadiene monomer in the presence of the reaction product of (1) an alkylbenzene sulfonic acid wherein said alkyl moiety contains from 6 to 20 carbon atoms and (2) a polyalkylene amine that contains from 6 to 20 carbon atoms and 2 to 8 amine moieties. The presence of a small amount of this reaction product very substantially reduces the amount of polymeric dispersing agent needed in such a polymerization.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 35 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 78:69066 USPATFULL
 TITLE: Stabilized halogenated butyl rubber
 INVENTOR(S): Roper, Robert, Summit, NJ, United States
 Newman, Neil F., Edison, NJ, United States
 Hous, Pierre, Steenokkerzeel, Belgium
 PATENT ASSIGNEE(S): Exxon Research & Engineering Co., Florham Park, NJ, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|------------------|------|--------------|
| PATENT INFORMATION: | US 4130519 | | 19781219 |
| APPLICATION INFO.: | US 1978-892645 | | 19780403 (5) |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Hoke, V. P. | | |
| LEGAL REPRESENTATIVE: | Cohen, Harvey L. | | |
| NUMBER OF CLAIMS: | 21 | | |
| EXEMPLARY CLAIM: | 1 | | |
| LINE COUNT: | 638 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A stabilized halogenated butyl rubber composition comprises halogenated butyl rubber, an alkali metal or alkaline earth metal carboxylate, an ether and an oxide or hydroxide of a Group IIA metal as exemplified by halogenated butyl rubber containing both bromine and chlorine stabilized

with a composition comprising calcium stearate, polyethoxylated adducts of sorbitol esterified with from 1 to 6 moles of oleic acid and mixtures thereof, and calcium hydroxide.

Halogenated butyl rubbers stabilized in the manner disclosed exhibit improved resistance to discoloration upon high temperature exposure, such as during the drying of polymers in the course of manufacture.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 36 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 76:17190 USPATFULL
 TITLE: Novel ionic foams
 INVENTOR(S): Lundberg, Robert D., Somerville, NJ, United States
 PATENT ASSIGNEE(S): Exxon Research and Engineering Co., Linden, NJ, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|-----------------------|--|------|--------------|
| PATENT INFORMATION: | US 3947387 | | 19760330 |
| APPLICATION INFO.: | US 1975-547639 | | 19750206 (5) |
| RELATED APPLN. INFO.: | Continuation-in-part of Ser. No. US 1973-346093, filed on 29 Mar 1973, now patented, Pat. No. US 3867319 | | |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Tillman, Murray | | |
| ASSISTANT EXAMINER: | De Benedictis, Sr., T. | | |
| LEGAL REPRESENTATIVE: | Baran, R. J. | | |
| NUMBER OF CLAIMS: | 13 | | |
| EXEMPLARY CLAIM: | 1 | | |
| NUMBER OF DRAWINGS: | 1 Drawing Figure(s); 1 Drawing Page(s) | | |
| LINE COUNT: | 1088 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention relates to novel foamed polymeric products which are prepared by foaming an ionic polymer in the presence of a volatile polar compound which acts as a plasticizer for the ionic groups present in said ionic polymer. The ionic polymer comprises from about 0.4 to 10 mole % pendant acid groups, especially sulfonic acid groups which have been neutralized to a degree of at least 97%, preferably 100%. In a most preferred embodiment of the instant invention, the foamed polymeric product is prepared from a sulfonated polystyrene polymer. This high strength, low density foam of the instant invention can be reprocessed by admixing with a low boiling solvent for the sulfonate groups, e.g., methanol, and repeating the above foaming process.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 37 OF 47 USPATFULL on STN
 ACCESSION NUMBER: 75:21208 USPATFULL
 TITLE: Impact-resistant rubber-modified plastics and process for producing the same
 INVENTOR(S): Fujii, Yoshikazu, Ibaragi, Japan
 Kato, Yasuyuki, Niihama, Japan
 Moritani, Masahiko, Niihama, Japan
 Maruyama, Hiroaki, Niihama, Japan
 PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Osaka, Japan (non-U.S. corporation)

| NUMBER | KIND | DATE |
|--------|------|------|
| | | |

PATENT INFORMATION: US 3879495 19750422
 APPLICATION INFO.: US 1973-416266 19731114 (5)

| | NUMBER | DATE |
|-----------------------|---------------------------------|----------|
| | ----- | ----- |
| PRIORITY INFORMATION: | JP 1972-115848 | 19721117 |
| | JP 1972-115857 | 19721117 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | Granted | |
| PRIMARY EXAMINER: | Schofer, Joseph L. | |
| ASSISTANT EXAMINER: | Holler, A. | |
| LEGAL REPRESENTATIVE: | Stevens, Davis, Miller & Mosher | |
| NUMBER OF CLAIMS: | 25 | |
| EXEMPLARY CLAIM: | 1 | |
| LINE COUNT: | 1210 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A novel, impact-resistant, rubber-modified plastic material having good aging resistance can be produced by polymerizing 40 to 99 parts by weight of at least one ethylenically unsaturated monomer capable of forming a plastic material having a glass transition temperature of 10°C or higher, in the presence of 1 to 60 parts by weight of an olefin-acrylate copolymer comprising as the essential components an olefin having 3 to 20 carbon atoms and an acrylate in which the alcohol moiety has 1 to 20 carbon atoms, particularly an alternating copolymer of the olefin and the acrylate, or an alternating interpolymers of the olefin, the acrylate in which the alcohol moiety has no ethylenic unsaturation, and 0.1 to 30 mole percent of the acrylate in which the alcohol moiety has ethylenic unsaturation.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 38 OF 47 USPATOLD on STN
 ACCESSION NUMBER: 1973:68900 USPATOLD
 TITLE: PROCESS FOR THE RECOVERY OF RUBBERY POLYMERS IN CRUMB FORM
 INVENTOR(S): BROERING L
 PATENT ASSIGNEE(S): NATIONAL DISTILLERS AND CHEMICAL CORPORATION

| | NUMBER | KIND | DATE |
|---------------------|----------------|-------|----------|
| | ----- | ----- | ----- |
| PATENT INFORMATION: | US 3751402 | A | 19730807 |
| APPLICATION INFO.: | US 1971-149043 | | 19710601 |

| | NUMBER | DATE |
|-----------------------|----------------|----------|
| | ----- | ----- |
| PRIORITY INFORMATION: | US 1971-149043 | 19710601 |
| | US 1969-815723 | 19690414 |
| | US 1969-839332 | 19690707 |

DOCUMENT TYPE: Utility
 FILE SEGMENT: GRANTED
 PRIMARY EXAMINER: SCHOFFER, JOSEPH L
 ASSISTANT EXAMINER: HAMROCK, W F
 LINE COUNT: 923

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 39 OF 47 USPATOLD on STN
 ACCESSION NUMBER: 1971:65249 USPATOLD
 TITLE: METHOD FOR OBTAINING POLYMER FROM POLYMER SOLUTION
 INVENTOR(S): HATTORI KENICHI

PATENT ASSIGNEE(S): KOMEDA YOSHIAKI
KAO SOAP CO., LTD.

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3583967 | A | 19710608 |
| APPLICATION INFO.: | US 1968-781874 | | 19681201 |

| | NUMBER | DATE |
|-----------------------|-----------------|----------|
| PRIORITY INFORMATION: | DE 1969-1900106 | 19690102 |
| | GB 1968-59675 | 19681216 |
| | US 1968-781874 | 19681206 |

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: SCHOFER, JOSEPH L
LINE COUNT: 399
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 40 OF 47 USPATOLD on SIN
ACCESSION NUMBER: 1970:46355 USPATOLD
TITLE: METHOD OF BONDING OLEFIN ELASTOMER TO TEXTILE FIBER AND
BONDED PRODUCT
INVENTOR(S): TORTI LUIGI
BERTELLI GUIDO
PATENT ASSIGNEE(S): MONTECATINI EDISON S.P.A.

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 3533831 | A | 19701013 |
| APPLICATION INFO.: | US 1967-674122 | | 19671001 |

| | NUMBER | DATE |
|-----------------------|---------------|----------|
| PRIORITY INFORMATION: | IT 1966-28860 | 19661014 |

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: MARTIN, WILLIAM D
LINE COUNT: 494
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 41 OF 47 USPATOLD on SIN
ACCESSION NUMBER: 1951:29955 USPATOLD
TITLE: Alkyl phenols as stabilizers for synthetic rubber latex
INVENTOR(S): BANES FRED W
SWANEY MILLER W

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 2565998 | A | 19510828 |
| APPLICATION INFO.: | US 1944-565572 | | 19441128 |

| | NUMBER | DATE |
|-----------------------|----------------|----------|
| PRIORITY INFORMATION: | US 1944-565572 | 19441128 |

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
LINE COUNT: 501

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 42 OF 47 USPATOLD on STN
ACCESSION NUMBER: 1950:21401 USPATOLD
TITLE: Alkyl phenol-hydroxylamine mixtures as polymerization
shortstops
INVENTOR(S): BANES FRED W
ERVING ARUNDALE

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 2514363 | A | 19500711 |
| APPLICATION INFO.: | US 1945-625965 | | 19451031 |

| | NUMBER | DATE |
|--|----------------|----------|
| PRIORITY INFORMATION: | US 1945-625965 | 19451031 |
| | GB 1946-15421 | 19460521 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | GRANTED | |
| LINE COUNT: | 410 | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |

L16 ANSWER 43 OF 47 USPATOLD on STN
ACCESSION NUMBER: 1949:32132 USPATOLD
TITLE: Dispersing agents and method of producing same
INVENTOR(S): DAVISON JOHN A
WILSON THOMAS L

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 2489943 | A | 19491129 |
| APPLICATION INFO.: | US 1841-773314 | | 18410910 |

| | NUMBER | DATE |
|--|----------------|----------|
| PRIORITY INFORMATION: | US 1947-773314 | 19470910 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | GRANTED | |
| LINE COUNT: | 468 | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |
| CAS INDEXING IS AVAILABLE FOR THIS PATENT. | | |

L16 ANSWER 44 OF 47 USPAT2 on STN
ACCESSION NUMBER: 2004:89059 USPAT2
TITLE: Flexible emissive coatings for elastomer substrates
INVENTOR(S): Halladay, James R., Harborcreek, PA, United States
Krakowski, Frank J., Erie, PA, United States
Caster, Kenneth C., Cary, NC, United States
Troughton, Jr., Ernest Barritt, Raleigh, NC, United States
PATENT ASSIGNEE(S): Lord Corporation, Cary, NC, United States (U.S. corporation)

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|---------------|
| PATENT INFORMATION: | US 6777026 | B2 | 20040817 |
| APPLICATION INFO.: | US 2002-265576 | | 20021007 (10) |

DOCUMENT TYPE: Utility
 FILE SEGMENT: GRANTED
 PRIMARY EXAMINER: Cameron, Erma
 LEGAL REPRESENTATIVE: Dearth, Miles B.
 NUMBER OF CLAIMS: 35
 EXEMPLARY CLAIM: 1
 NUMBER OF DRAWINGS: 6 Drawing Figure(s); 6 Drawing Page(s)
 LINE COUNT: 3579

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Emissive coatings for flexible substrates, preferably elastomers or elastomers bonded to metal are disclosed. The coating composition is formed by combining parts (a) and (b) where part (a) comprises an organic solution or aqueous dispersion of a functional group containing polymer or copolymer and thermal conductive filler; and part (b) comprises a liquid curing component, for example a poly isocyanate, a carbodiimide, or an amino resin. The coating compounds can be applied to an substrate either before or after the substrate has been vulcanized. The coatings can be cured at ambient temperatures and provide heat dissipation over long term service at elevated temperatures.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L16 ANSWER 45 OF 47 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:75356 CAPLUS
 DOCUMENT NUMBER: 144:151121
 TITLE: Process for producing isobutylene polymer
 INVENTOR(S): Yoshimi, Tomoyuki; Furukawa, Naoki
 PATENT ASSIGNEE(S): Kaneka Corporation, Japan
 SOURCE: PCT Int. Appl., 19 pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|--|----------|-----------------|----------|
| WO 2006008902 | A1 | 20060126 | WO 2005-JP11332 | 20050621 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: | AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | |

PRIORITY APPLN. INFO.: JP 2004-209434 A 20040716

AB Resin particles or resin pellets of a polymer (especially isobutylene-styrene block copolymer) are obtained while attaining a reduction in residual solvent amount in the product. In the process, a monohalogenated hydrocarbon solvent (e.g., BuCl) in a stripping step is inhibited from decomposing and thus yielding an alc. in order that the solvent to be recovered can be reused. The solvent of a polymer solution is a mixed solvent comprising a primary and/or secondary monohalogenated C3-8 hydrocarbon and an aliphatic and/or aromatic hydrocarbon. Before resin

particles are obtained from the solution containing an isobutylene block copolymer and obtained after polymerization and catalyst deactivation/removal, a surfactant (e.g., polyethylene glycol monostearate) and water are added to the solution and this mixture is heated to remove the solvent with stirring for liquid-liquid dispersion. In this step, the actual pressure of the gas phase part in the tank is regulated so as to be in a specific range.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 46 OF 47 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:732675 CAPLUS

DOCUMENT NUMBER: 143:194677

TITLE: Method for producing isobutylene resin powder with reduced residual solvent and monomer

INVENTOR(S): Yoshimi, Tomoyuki; Ohara, Koichiro; Furukawa, Naoki

PATENT ASSIGNEE(S): Kaneka Corporation, Japan

SOURCE: PCT Int. Appl., 18 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|-----------------|------------|
| WO 2005073259 | A1 | 20050811 | WO 2005-JP563 | 20050119 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: | BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| EP 1712569 | A1 | 20061018 | EP 2005-703800 | 20050119 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS | | | |
| US 20070173635 | A1 | 20070726 | US 2006-587636 | 20060728 |
| PRIORITY APPLN. INFO.: | | | JP 2004-20997 | A 20040129 |
| | | | WO 2005-JP563 | W 20050119 |

AB Title method comprises (i) suspending an isobutylene polymer solution in water in the presence of a surfactant, (ii) removing the solvent and obtaining a resin slurry, and (iii) steam-stripping at 150-180°. Thus, 844 g isobutylene was polymerized in the presence of titanium tetrachloride in a mixture of 1-chlorobutane and hexane, 408 g styrene was added therein and polymerized to give a copolymer solution with number

average mol. weight 100,000 and polydispersity 1.14, 12.5 L of which was suspended in 12.5 L water in the presence of polyethylene glycol monostearate and heated at 90° to evaporate solvent, cooled when the inner temperature was reached at 95°, the resulting slurry was steam-stripping at 152° for 60 min to give a resin slurry, which was centrifuged and extruded to give a pellet, showing residual monomer <1 ppm and tensile strength 18.4 MPa.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 47 OF 47 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:569432 CAPLUS
 DOCUMENT NUMBER: 143:60799
 TITLE: Manufacture of isobutylene polymer granules with good blocking resistance
 INVENTOR(S): Yoshimi, Tomoyuki; Kyotani, Susumu
 PATENT ASSIGNEE(S): Kaneka Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005171074 | A | 20050630 | JP 2003-412864 | 20031211 |
| PRIORITY APPLN. INFO.: | | | JP 2003-412864 | 20031211 |

AB The manufacturing method contains removing solvents from isobutylene polymer solns. by simultaneously heating and dispersing with surfactants, water, and silicone oils. Thus, a solution of isobutylene-styrene block copolymer in 1-chlorobutane and hexane was stirred with polyethylene glycol monostearate, silicone oil (DB 110N), and H₂O, simultaneously heated at 90°, steam-stripped, and dried to give granules with good transparency.

=> d l16 43 ibib hit

L16 ANSWER 43 OF 47 USPATOLD on STN
 ACCESSION NUMBER: 1949:32132 USPATOLD
 TITLE: Dispersing agents and method of producing same
 INVENTOR(S): DAVISON JOHN A
 WILSON THOMAS L

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 2489943 | A | 19491129 |
| APPLICATION INFO.: | US 1841-773314 | | 18410910 |

| | NUMBER | DATE |
|-----------------------|----------------|----------|
| PRIORITY INFORMATION: | US 1947-773314 | 19470910 |
| DOCUMENT TYPE: | Utility | |
| FILE SEGMENT: | GRANTED | |
| LINE COUNT: | 468 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD Soaps, and surface-active agents which are sulfates or sulfonates of organic compounds containing at least one group having more than 8 carbon atoms, e. g. alkyl sulfates or sulfonates, sulfated or sulfonated ethers of long and short chain aliphatic groups, sulfated or sulfonated alkyl esters of long chain fatty acids, sulfonated alkyl substituted amides of long chain fatty acids, and alkylated aryl sulfonates, are conventional dispersing agents used in the preparation of various synthetic resins by the so-called emulsion-polymerization process where the polymerizable monomers are polymerized in aqueous emulsion to form an aqueous

dispersion of the desired resin, generally called a resin latex, or simply a latex. In such emulsion-polymerization processes, after the desired conversion of polymerizable monomers to polymer has taken place, the unreacted monomers are removed or "stripped" from the latex. Those monomers which are gases are vented from the reactor whereas residual liquid monomers are distilled from the reaction mixture or latex, as by steam or vacuum distillation. Soaps and the above referred surface-active agents cause a large amount of foaming in the reactor during the stripping operation, particularly when the residual volume and high production costs. A known type of emulsifying agent which does not give excessive foaming in the reactor is the condensation product of formaldehyde with an aryl sulfonic acid or salt thereof, e. g. the sodium salt of naphthalene sulfonic acid or phenol sulfonic acid.

DETD w l f Yf a d"ed res n % & < > 25f f h W+/- , t F0 Polymerizates may be readily diluted with butylene prepared by emulsion polymerization of such mixtures of the acrylonitrile and isobutylene. An extremely small amount of that is necessary is to join the copolymer dispersion to the textile material by immersing the fabric through the other article of textile material in the dispersion of the copolymer, removing from the bath squeezing out the dispersion from the textile material and drying the fabric. The fabric is treated in conventional padding apparatus where the fabric passes through the treating bath, or the fabric by a conventional spreader bar doctor blade, spray applicator, or the like. The treated textile material may be dried in conventional drying apparatus. The textile material is heated to a temperature sufficient to soften the dried deposited particles of acrylonitrile-isobutylene synthetic resin to firmly bind the particles to the fibers of the textile material and to adjacent particles. Such heating temperature should be between 180 F. and F. The drying apparatus may reach the desired heating temperature, or the treated textile material may be dried at lower temperature, as from room temperature to less than 180 P and then heated to between 180 F. and F. In the case of fabrics ironing the thus treated fabric, as by passing through conventional fabric finishing rolls, is desirable to give additional stiffening action.

DETD Known surface active agents used in the emulsion-polymerization of mixtures of acrylonitrile and isobutylene, which although they do not cause discoloration of the resin product, do cause excessive foaming during the stripping operation, particularly with removal of the residual monomeric acrylonitrile, are the alkyl esters of sulfosuccinic acid, as represented for example, by the sodium salt of dioctylsulfosuccinate. It has been found that stripping of unreacted acrylonitrile monomer by steam distillation after venting of the unreacted isobutylene monomer from a gallon batch of an emulsion-polymerizate of acrylonitrile and isobutylene made with such emulsifying agents commonly took as long as twelve or more hours because of excessive foaming of the mixture. Dispersing agents which are the condensation products of an aryl sulfonic acid, e. g.

DETD naphthalene sulfonic acid, with formaldehyde, when used as emulsifying agents for the acrylonitrile and isobutylene, do not cause appreciable foaming during removal of unreacted monomers, but they are unsatisfactory for preparing the acrylonitrile-isobutylene resin latex for textile treatment because fabrics treated with the latex containing such dispersing agents become discolored on ageing, white fabrics becoming yellow particularly on exposure to sunlight.

DETD The polymeric ester of 2-ethylhexenediol-1,3 and sulfosuccinic acid of the present invention when used to emulsify acrylonitrile and isobutylene in aqueous emulsion-polymerization processes gives an emulsion polymerizate that does not foam on stripping of the unreacted monomers and that does not cause a discoloration on ageing of textile

material treated with the emulsionpolymerizate. The residual acrylonitrile monomer may be steam distilled from a gallon batch of such emulsion polymerizate in less than three hours. The dispersing agents of the present invention are thus very different from the sulfosuccinic acid esters of monohydric alcohols, such as the octyl succinates, which cause excessive foaming, as above described. The polymeric esters of 2-ethylhexanediol-1,3 and sulfosuccinic acid of the present invention are also very different from the known sulfosuccinic acid esters of such polyhydric alcohols as ethylene glycol, propylene glycol, butylene glycol, glycerine, and pentaerythrite which are known to be effective wetting agents, but which are ineffective as emulsifying and dispersing agents, as in the emulsion-polymerization of acrylonitrile-isobutylene synthetic resins.

=> d 116 42 ibib hit

L16 ANSWER 42 OF 47 USPATOLD on SIN
 ACCESSION NUMBER: 1950:21401 USPATOLD
 TITLE: Alkyl phenol-hydroxylamine mixtures as polymerization shortstops
 INVENTOR(S): BANES FRED W
 ERVING ARUNDALE

| | NUMBER | KIND | DATE |
|---------------------|----------------|------|----------|
| PATENT INFORMATION: | US 2514363 | A | 19500711 |
| APPLICATION INFO.: | US 1945-625965 | | 19451031 |

| | NUMBER | DATE |
|-----------------------|----------------|----------|
| PRIORITY INFORMATION: | US 1945-625965 | 19451031 |
| | GB 1946-15421 | 19460521 |

DOCUMENT TYPE: Utility
 FILE SEGMENT: GRANTED
 LINE COUNT: 410
 CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD In actual operation it is found that rubber of optimum quality is obtained if the polymerization is not allowed to exceed to 80% conversion of the monomers. Above this range the rubber loses its ease of processing, becomes insoluble in its raw state and yields vulcanizates of inferior properties. In order to avoid the effects of the monomers themselves or low polymers thereof such as dimers and trimers on the final product and also for reasons of economy, it is necessary to remove unreacted monomers from the latex. This is usually done by stripping the latex under reduced pressure with or without the aid of heat and/or a stripping agent such as steam or inert gas. Inasmuch as the stripping conditions are usually as severe as or perhaps more severe than the actual polymerization conditions it is necessary to "short-stop" the system so as to prevent further polymerization of the monomers and to prevent inter-polymer reaction, i. e. cross-linking of polymer chains to produce insolubility and a general deterioration of rubber quality.

DETD The specific combination of short-stopping agents contemplated consists of hydroxylamine and acid addition salts thereof such as hydroxylamine hydrochloride and dialkyl derivatives of o and p-cresols corresponding to the general formula wherein each B stands for an alkyl group of from 1 to 5 carbon atoms and R₁ stands for methyl when R_s stands for hydrogen and R₁ stands for hydrogen when R_s stands for methyl. Specific compounds contemplated include materials such as ditertiary butyl cresols,

di-tertiary amyl cresol, 2,4,6 trimethyl phenol, 2,3-dimethyl-6-tertiary butyl phenol, 2,6 diethyl-4-methyl phenol and the like. The ditertiary butyl cresol may be readily prepared for example, by bubbling isobutylene through para cresol containing a trace (0.1 to 2%) of an acid type catalyst such as sulfuric, cresol-sulfonic acid, etc., or other suitable type of alkylation catalyst at a temperature of about 50-60 C., until about two molar equivalents of Isobutylene have been absorbed. To this mixture is then added sufficient base such as Ba(OH)₂, CaCO₃, NaOH, etc. to neutralize the acid catalyst and prevent subsequent dealkylation. The mixture is then subjected to distillation under reduced pressure to remove isobutylene, isobutylene polymers, unreacted cresol, etc. The residue containing principally dibutylated cresol can be further purified by vacuum distillation (about C. at mm. Hg) or by recrystallization from alcohol or other suitable solvent to yield a crystalline material of about 68-69 C. melting point. Instead of using para cresol, one may also use ortho or meta cresol or other phenols and instead of isobutylene one may use other isoolefins such as isoamylene and the like. The preparation of alkylated phenols is described in some detail in the article entitled "Alkylated Cresols from Refinery Gases" by Menerich in Industrial and Engineering Chemistry, vol. 35, page (1943). The mixture of short-stoppers contemplated by the present invention is applicable to synthetic rubber latices, which are prepared, as is well known by the polymerization in aqueous emulsion, of conjugated diolefins such as butadiene-1,3, isoprene, piperylene, dimethyl butadiene, methyl pentadiene and the like taken singly or in combination and in admixture with other polymerizable compounds such as styrene, alpha methyl styrene, para methyl styrene, alpha methyl para methyl styrene, halogenated styrenes such as chlorobromo-styrenes, acrylonitrile, methacrylonitrile, acrylic and methacrylic acid esters such as methyl acrylate and methyl methacrylate, fumaric acid esters such as ethyl fumarate and unsaturated ketones such as methyl vinyl ketone and methyl isopropenyl ketone and also to resin latices prepared by polymerizing monoolefinic materials such as styrene, methyl methacrylate, methyl isopropenyl ketone and the like in aqueous emulsion alone or in admixture with minor amounts of conjugated diolefins of 4 to 6 carbon atoms per molecule. This invention is also applicable to these latices before, during or after creaming thereof as described in application Serial No. 556,659 filed September 30, 1944, now U. S. Patent 2,444,801, by E. Arundale. These latices will be referred to hereinafter as synthetic latices or synthetic rubber latices and are not to be confused with any so artificial latices prepared by dispersing solid polymerizes whether of natural or artificial origin in water. The synthetic latices which are stabilized in accordance with the present invention are prepared by emulsifying the monomers or mixtures of monomers in from about an equal to about a twofold quantity of water using, as the emulsifier, water-soluble soaps such as alkali metal or ammonium salts of oleic, stearic or palmitic acids or mixtures of fatty acids such as are obtained by selective hydrogenation of the mixture of fatty acids obtained from tallow. Other emulsifying agents which may be used include such synthetic surface active agents as salts of alkylated benzene and naphthalene sulfonic acids, fatty alcohol sulfates, salts of aliphatic or olefinic sulfonic acids and also acid addition salts of high molecular weight alkyl amines such as dodecyl amine hydrochloride or acetate. The amount of emulsifier used is ordinarily about 0.5 to about weight per cent based on the reactants. A polymerization catalyst such as benzoyl peroxide, hydrogen peroxide and alkali metal or ammonium perborates or persulfates or the like is provided in the reaction mixture in amounts of about 0.05 to about 0.6 weight per cent based on

DETD

the reactants. It is ordinarily preferred to provide a suitable polymerization modifier or promoter such as dialkyl xanthogen disulfides or 0 aliphatic mercaptans containing at least six carbon atoms per molecule such as hexyl, octyl, decyl, dodecyl, Lorol or benzyl mercaptans in the reaction mixture in amounts of between about . 0.2 to about 1.0 weight per cent based upon the reactants present. The reaction mixture is maintained at the desired temperature of between about C. and about C. for a length of time sufficient to convert a major proportion, generally about 75% of the monomers to a solid, high molecular weight polymerize of the desired properties. Ordinarily about 12 to about hours are required to reach this conversion. The proportions of materials used, temperature, time of reaction, etc., are well known or understood by the art and form no part of the present invention.

=> d 116 41 ibib hit

L16 ANSWER 41 OF 47 USPATOLD on SIN
 ACCESSION NUMBER: 1951:29955 USPATOLD
 TITLE: Alkyl phenols as stabilizers for synthetic rubber latex
 INVENTOR(S): BANES FRED W
 SWANEY MILLER W

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| PATENT INFORMATION: | US 2565998 | A | 19510828 |
| APPLICATION INFO.: | US 1944-565572 | | 19441128 |

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| FILE SEGMENT: | GRANTED | |
| LINE COUNT: | 501 | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

DETD 4: The specific type of stabilizer we have found to be suitable for the stabilization of Buna latices is produced by the alkylation of phenols such as para-cresol with isoolefins such-as isobutylene, for instance, as catalyzed by a trace of 5U an acid type catalyst such as sulfuric, cresol-sul-fonic acid, etc. or other suitable type of alkylation catalyst. The material found eminently satisfactory is the di-tertiary-butyl derivative of para-cresol which hi reasonably pure form 5- (though possibly containing different isomers) is a crystalline solid melting at 68-69 C. This substance can be prepared hi several ways, an example being the following: into para-cresol containing a trace (0.1 to 2%) of cone, sulfuric acid or a phenol-, or cresol-sulfonic acid, etc., is bubbled isobutylene at about 50-60 C. until about two molar equivalents have been absorbed indicating a substantially complete reaction. To this mixture is then added a little base, for example, tralaze 1 The mixture is then subjected to reduced pressure to remove isobutylene, isobutylene polymers, unreacted cresol and monobutylated cresol. The residue, containing largely the dibutylated cresol can be further purified by vacuum distillation (about C. @ mm. Hg.) or by recrystallization from alcohol or other suitable solvent to yield a crystalline material of the melting point stated above. Instead of using para cresol, one may also use ortho or meta cresol or other monobasic phenols and Instead of Isobutylene one may use other isoolefins such as isoamylen and the like. For a further description of the preparation of 5 alkylated phenols reference is made to an article entitled "Alkylated

Cresols from Refinery Oases" by Wernrich in Ind. Eng. Chem. vol. 35, page (1943).

DETD The synthetic rubber latices which are stabilized in accordance with this invention are prepared by emulsifying the reactants in from about an equal to a twofold quantity of water using as the emulsifier water-soluble soaps such as alkali metal or ammonium oleates, stearates, palmitates as well as various surface-active agents such as salts of alkylated naphthalene sulfonic acids, fatty alcohol sulfates, salts of aliphatic and olefinic sulfonic acids and also acid addition salts of high molecular alkyl amines. The amount of emulsifier used is ordinarily about 0.5 to about 5 weight per cent based on the reactants. A polymerization catalyst such as benzoyl peroxide, hydrogen peroxide and alkali metal or ammonium perborates or persulfates or the like are provided in the reaction mixture in amounts of about 0.05 to about 0.6 weight per cent based on reactants. It is ordinarily preferred to provide a suitable polymerization modifier or promoter such as dialkyl xanthogen disulfides or aliphatic mercaptans containing at least 7 carbon atoms in an aliphatic linkage such as heptyl, octyl, decyl, dodecyl, Lorol or benzyl mercaptan in the reaction mixture in amounts of between about 0.2 to about 1.0 weight per cent based upon the reactants present. The reaction mixture is maintained at the desired temperature of between about C. and about C. for a length of time sufficient to convert a major proportion, generally about 75%, of the reactants to a rubbery polymer of the desired consistency. Ordinarily, about 12 to about 18 hours are required to reach this conversion. The proportions of materials well known or understood by the art and form no part of the present invention.

CLM What we claim and desire to secure by Letters Patent is:

1. A method which comprises polymerizing in aqueous emulsion a conjugated diolefin having from 4 to 6 carbon atoms to form a synthetic rubber latex, adding to the latex 0.1 to 7% based on the weight of rubber of a di-ter-alkyl cresol having from 4 to 5 carbon atoms per alkyl group, and thereafter stripping the latex of unreacted monomer by means of a gaseous stripping agent at a temperature between and C.
2. A method according to claim 1 wherein the stripping is carried out at subatmospheric pressure and wherein the stripping agent is steam.
3. A composition comprising a synthetic rubber latex obtained by polymerization in aqueous emulsion of a major proportion of butadiene-1,3 and a minor proportion of acrylonitrile and, as a stabilizing agent therefor, 0.2% by weight of rubber of di-ter-butyl p-cresol and 2% by weight of rubber of diisobutyl phenol sulfide.
4. In a method of stabilizing a synthetic rubber latex obtained by copolymerization in aqueous emulsion of a major proportion of butadiene-1,3 and a minor proportion of acrylonitrile, the improvement which comprises adding to the latex about 0.1 to 2% by weight of rubber of di-ter-butyl p-cresol and about 2% by weight of rubber of diisobutyl phenol sulfide.
5. As a latex stabilizing composition, an aqueous dispersion comprising about parts by weight of water, about parts by weight of di-ter-butyl p-cresol having a melting point between 68 and 69 C., about 24 parts by weight of soap and about 8 parts by weight of glue; the dispersed particles having predominately the size of about 1 micron.

6. A process for preparing a latex stabilizing agent which comprises ball-milling for about 24 hours parts by weight of di-ter-butyl p-cresol having a melting point between 68 and 69 C., about parts by weight of water, about 33.4 parts by weight of soap flakes and about 3.3 parts by weight of glue.

7. A method which comprises polymerizing in aqueous emulsion a mixture of a major proportion of butadiene-1,3 and a minor proportion of styrene to form a synthetic rubber latex, adding to the latex 0.1 to 2.0% based on the weight of rubber of di-tert-butyl-p-cresol, and thereafter stripping the latex of unreacted monomer by means of a gaseous stripping agent at a temperature between and C.

8. A method which comprises polymerizing in aqueous emulsion a mixture of a major proportion of butadiene-1,3 and a minor proportion of acrylonitrile to form a synthetic rubber latex, adding to the latex 0.1 to 2.0% based on the weight of rubber of di-tert-butyl-p-cresol, and thereafter stripping the latex of unreacted monomer by means of a gaseous stripping agent at a temperature between and 70° C.

9. A method which comprises polymerizing in aqueous emulsion a mixture of a major proportion of a butadiene-1,3 hydrocarbon with a minor proportion of a copolymerizable compound containing a single C=C linkage to form a synthetic rubber latex, adding to the latex 0.1 to 7.0% based on the weight of rubber of di-tertiary-butyl cresol, and thereafter stripping the latex of unreacted monomer at a temperature between and C. and at subatmospheric pressure by means of steam as a stripping agent.

MILLER W. SWANEY. FRED W. BANES.

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 ACCESSION NUMBER: 84:31773 USPATFULL
 TITLE: Process for nonaqueous dispersion polymerization of butadiene in the presence of polymeric dispersing agents
 INVENTOR(S): Throckmorton, Morford C., Akron, OH, United States
 PATENT ASSIGNEE(S): The Goodyear Tire & Rubber Company, Akron, OH, United States (U.S. corporation)

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| APPLICATION INFO.: | US 1982-420065 | | 19820920 (6) |
| DOCUMENT TYPE: | Utility | | |
| FILE SEGMENT: | Granted | | |
| PRIMARY EXAMINER: | Michl, Paul R. | | |
| LEGAL REPRESENTATIVE: | Rockhill, Alvin T. | | |
| NUMBER OF CLAIMS: | 16 | | |
| EXEMPLARY CLAIM: | 1 | | |
| LINE COUNT: | 1236 | | |

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM In suspension polymerization, the initiator is dissolved in the monomer, the monomer is dispersed in water, and a dispersing agent is incorporated to stabilize the suspension formed. All suspension polymerization processes use some type of surfactant to keep

the monomer globules dispersed during the reaction in order to avoid coalescence and agglomeration of the polymer. Not only does the suspension stabilizer affect the particle size and shape, but also the clarity, transparency and film-forming properties of the resultant polymer. A variety of dispersing agents including water-insoluble, finely divided, inorganic materials and organic materials, depending upon the monomer to be polymerized, have been used as dispersing agents. Thus, for example, talc, barium calcium and magnesium carbonates, silicates, phosphates and sulfates, as well as poly(vinyl alcohol), tragacanth gum, salts of styrene-maleic anhydride copolymers, vinyl acetate-maleic anhydride copolymers and their salts, starch, gelatin, pectin, alginates, methyl cellulose, carboxymethyl-cellulose, bentonite, limestone and alumina have been used as suspending agents. A major advantage of suspension polymerization is that the polymeric products are obtained in the form of small beads which are easily filtered, washed and dried. For reasons of cost and unreactivity, water is a much more desirable diluent and heat-transfer medium than most organic solvents.

- SUMM The butyl rubbers that can be employed as polymeric dispersing agents include: isoprene/isobutylene copolymers, isoprene/isoamylene copolymers, butadiene/isobutylene copolymers, and the like. These polymers are generally comprised of about 80% to 99% by weight of the olefinic component while the remaining portion of the copolymer is comprised of the conjugated diolefinic component. It is preferred for such butyl rubbers to be comprised of 95% to 99% by weight of the olefinic component and 1% to 5% by weight of the conjugated diolefinic component.
- SUMM A further advantage of using this nonaqueous dispersion polymerization technique is that the polymerization medium can be recovered and used directly for further polymerizations without the usual steam stripping, distillation, and drying since the dispersed particles can be removed by centrifuging, sedimentation or filtration.
- DETD An experiment was performed to demonstrate that the medium in which nonaqueous dispersion polymerizations have been conducted can be recycled and used again in subsequent polymerizations without the necessity for steam-stripping and distillation of that solvent. This recycling process offers a great advantage in using such nonaqueous dispersion polymerization since it eliminates the need for steam stripping and distillation of the solvent which is generally practiced in the solution polymerization of polybutadiene.
- DETD These examples prove that the organic medium used in the nonaqueous dispersion polymerization of high cis-1,4-polybutadiene can successfully be recycled. The ability to recycle such an organic medium is a very important advantage in the commercial production of high cis-1,4-polybutadiene and will result in very substantial cost savings. The energy requirements for this recycling process are very small in comparison to the energy requirements necessary for steam stripping and distillation of solvents which is usually practiced in solution polymerization of polybutadiene.
- DETD A butadiene in n-pentane premix was prepared as outlined in Examples 1 through 6. A series of experiments were conducted evaluating a number of polyolefin type elastomers (ethylene-propylene-diene terpolymers, ethylene-propylene copolymers and isobutylene-isoprene copolymers) as possible dispersing agents for preparing NAD's of high cis-1,4-polybutadiene. The compositions of the polymers used as dispersing agents in this series of experiments is

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given in Table XI.

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COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

64.93

334.24

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

CA SUBSCRIBER PRICE

-2.40

-6.40

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